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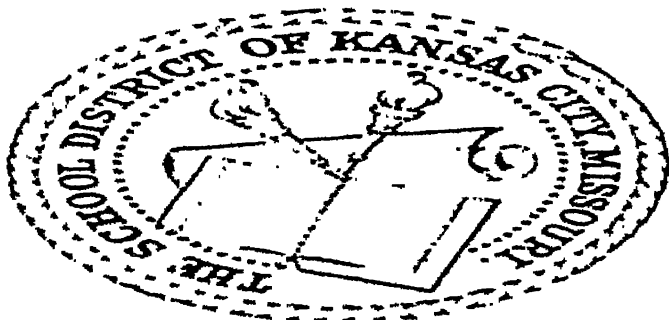
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# INDUSTRIAL ARTS INDEX

THIRD ANNUAL CUMULATION

SUBJECT INDEX TO A SELECTED LIST OF ENGINEERING  
AND TRADE PERIODICALS FOR 1915

EDITED BY

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# Industrial Arts Index

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With this issue the Industrial Arts Index completes its third year. Although it is the annual volume for 1915 it indexes most of the magazines for December 1914 and only a few for December 1915. The Proceedings of the American Gas Institute, Journal of the Boston Society of Civil Engineers, Journal of the Institution of Electrical Engineers and The University of Minnesota Studies in Engineering have been added this year.

There have been many suggestions for further additions to the list of periodicals indexed. Among these are the Bulletin of the American Railway Engineering Association; Canadian Mining Institute Quarterly Bulletin; Gas Age; Gas World (London); Journal of Electricity, Power and Gas; Journal of Gas Lighting (London); London Times (Engineering Supplement); Mining and Engineering World; Mining Press; Proceedings of the Electric Light Association; Printer's Ink; Printing Art; Bulletin of the Society of Automobile Engineers; Technology Monthly and Harvard Engineering Journal; American Lumberman.

Any of our subscribers who may be interested in having one or more of these periodicals indexed are asked to send us their votes. Any suggestions as to other additions or improvements will also be carefully considered.

There are several other periodicals which would be indexed in the Industrial Arts Index if the publishers were willing to furnish us copies for the purpose. It is for this reason that Ice and Refrigeration, Electric Journal, American Machinist, and Proceedings of the American Society of Civil Engineers are not included.

## National Preparedness and Military Training

A new aid to the many who are discussing "preparedness" is the Abridged Debaters' Handbook on military training, just published by The H. W. Wilson Company (25c.). This covers the question of military training in schools and colleges, gives a list of organizations working for or against national defense, a brief, six pages of bibliography, and fifty-five pages of excerpts on both sides of the question. National Defense, one of the titles in the Debaters' Handbook series, price \$1.00, should be used to supplement the one on military training, if fuller information as to the present strength of our national defenses is desired.

A larger handbook on military training, in the regular series, will be issued as soon as the amount of valuable new material seems to warrant it. This handbook will include the question of compulsory military service.

## Notes and Announcements

The Civil Engineers' Society of St. Paul began in November the publication of a monthly bulletin. This publication "is for the purpose of giving to the society an organ through which it may advocate a better understanding of the engineering profession in relation to the public welfare."

The Journal of the Association of Engineering Societies will be discontinued with the December, 1915, issue, owing to the disbanding of the Association on December 31, 1915. The Engineers' Club of St. Louis, the largest society in the Association and its active head for the past two years, will begin the publication of a bi-monthly journal to be known as the Journal of the Engineers' Club of St. Louis.

The Associated Technical Men, an association formed in 1914 for the purpose of furthering the interests of technical men, has commenced the publication of a monthly bul-

## NOTES AND ANNOUNCEMENTS

letin to keep all members of the society informed as to its progress and to acquaint non-members with the work it is doing. A. M. Wolf, 180 North Dearborn Street, Chicago, is editor of the publication.

The first number of the Utilities Magazine was published in July, 1915. This is the official organ of the Utilities Bureau, which grew out of the conference of American mayors on public policies as to municipal utilities, held in Philadelphia, in November, 1914. In November, 1915, a Valuation Conference under the auspices of this bureau was held in Philadelphia, seven sessions being held. The proceedings of the conference will be made available in the January issue of the Utilities Magazine.

The Rhode Island Highway News, the first number of which was issued in September, 1915, is a publication of the State Board of Public Roads, and is similar to those which are issued by the highway authorities of several other states. It contains short articles on the maintenance of bituminous macadam and water bound macadam roads, a description of the business methods in the office of the board and discussions of various phases of construction and maintenance work.

There were no numbers of the Journal of the Institution of Electrical Engineers published between the issues of June 15 and Dec. 1.

The first issue of the new quarterly Bulletin of the National District Heating Association has made its appearance, being dated October, 1915. The bulletin is of standard magazine size. Under the committee heading, it is stated that the station operating committee will take up, among other things, the subjects of (1) oil as a fuel; (2) bleeder type of turbo-generator, and (3) operating data relative to a certain heating plant on which accurate information will be obtained by the committee through tests made by one of the member companies.

The Textile World Record, published by the Lord & Nagle Company, and the Textile Man-

ufacturers Journal, published by J. H. Bragdon & Company, have been consolidated to form a new publication known as the Textile World Journal. This is issued weekly, combining the news and market report features, which have been a specialty of the Textile Manufacturers Journal, and the technical machinery and special features of the Textile World Record. The Bragdon, Lord & Nagle Company, Incorporated, publish the Textile World Journal at their publication office, 377 Broadway, New York.

The Railway Electrical Engineer, which has been published by the Wray Publishing Company, at Chicago, has been bought by the Simmons-Boardman Publishing Company, the publisher of the Railway Age Gazette, and the Signal Engineer. Beginning with November it will be published by the Simmons-Boardman Publishing Company from its New York office. It will not be consolidated with any of the other periodicals of this company, but will be continued as a separate monthly publication.

The Colliery Engineer, formerly published by the International Textbook Company, at Scranton, Pennsylvania, has been purchased by the Hill Publishing Company, and was consolidated with the Coal Age in November. The latter periodical will be added to the list of those indexed in the Industrial Arts Index.

Among the magazines suggested for indexing in the Industrial Arts Index is the Mining and Engineering World, published in Chicago. The weekly issues of the magazine contain the titles of articles on mining, metallurgy and geology appearing in American and foreign periodicals. These are cumulated in semi-annual volumes, and published as the Mining World Index of Current Literature. Some four hundred periodicals are indexed, also publications of schools, societies, and government bureaus, and new books. The index has a classified arrangement, and, in many cases, a brief annotation follows the title. The seventh volume, covering January to June, 1915, has recently been published.

# List of Periodicals Indexed

- Am Chem Soc J**—Journal of the American Chemical Society. \$6. Charles L. Parsons, sec., Box 505, Washington, D. C.
- Am Eng**—American Engineer. See Ry Age (Mech ed).
- Am For**—American Forestry. \$3; single numbers 25c. American Forestry Assn., 1410 H St, N. W., Washington, D. C.
- Am Gas Inst Pro**—Proceedings of the American Gas Institute, ninth annual meeting, 1914. \$7.50 to libraries. American Gas Institute, 29 W 39th St, New York.
- Am Gas Light J**—American Gas Light Journal. \$3; single numbers 10c. American Gas Light Journal, 42 Pine St, New York.
- Am Ind**—American Industries. \$1; single numbers 10c. National Manufacturers Co., 30 Church St, New York.
- Am Inst Arch J**—Journal of the American Institute of Architects. \$5; single numbers 50c. American Institute of Architects, The Octagon, Washington, D. C.
- Am Inst E E Pro**—American Institute of Electrical Engineers. Proceedings. \$10; single numbers \$1. F. L. Hutchinson, sec., 33 W 39th St, New York.
- Am Inst Min E Bul**—Bulletin of the American Institute of Mining Engineers, subs. \$10; single numbers \$1; to members, public libraries, and educational institutions, \$5; single numbers 50c. B. Stoughton, sec., 29 W 39th St, New York.
- Am Soc Heat & V E**—Transactions of the American Society of Heating and Ventilating Engineers. American Society of Heating and Ventilating Engineers, 29 W 39th St, New York.
- Am Soc M E J**—Journal of the American Society of Mechanical Engineers. \$3; single numbers 35c. American Society of Mechanical Engineers, 29 W 39th St, New York.
- Am Water Works Assn J**—Journal of the American Water Works Association. American Water Works Assn., 2419 Greenmount Av, Baltimore, Md.
- Arch & Bldg**—Architecture and Building. \$2; single numbers 30c. William T. Comstock Co., 23 Warren St, New York.
- Arch Rec**—Architectural Record. \$3; single numbers 35c. Architectural Record Co., 115 W 40th St, New York.
- Assn Eng Soc J**—Journal of the Association of Engineering Societies. \$3; single numbers 30c. Association of Engineering Societies, J. W. Peters, sec., 3817 Olive St, St. Louis, Mo.
- Automobile**—Automobile. \$3; single numbers 10c. Glass Journal Co., 231 W 39th St, New York.
- Bldg Age**—Building Age. \$2; single numbers 30c. David Williams Co., 239 W 39th St, New York.
- Boston Soc C E J**—Journal of the Boston Society of Civil Engineers. \$4 (ten numbers); single numbers 50c. Boston Society of Civil Engineers, 715 Tremont Temple, Boston.
- Bricks**—Brickbuilder. \$5; single numbers 50c. Rogers & Manson Co., 85 Water St, Boston.
- Colliery**—Colliery Engineer. \$2; single numbers 25c. Hill Pub. Co., 10th Av at 36th St, New York.
- Consolidated with Coal Age on Nov. 8.
- Concrete Cem**—Concrete-Cement Age. \$1.50; single numbers 15c. Concrete-Cement Age Pub. Co., 97 West Fort St, Detroit, Mich.
- Dom Eng**—Domestic Engineering. \$2; single numbers 10c. Domestic Engineering Co., 445-447 Plymouth Court, Chicago.
- Econ Geol**—Economic Geology. \$3; single numbers 50c. Economic Geology Pub. Co., 41 North Queen St, Lancaster, Pa.
- Elec Ry J**—Electric Railway Journal. \$3; single numbers 10c. McGraw Pub. Co., 239 W 39th St, New York.
- Elec R & W Elec'n**—Electrical Review and Western Electrician. \$3; single numbers 10c. Electrical Review Pub. Co., 608 S Dearborn St, Chicago.
- Elec W**—Electrical World. \$3 single numbers 10c. McGraw Pub Co., 239 W. 39th St, New York.
- Engineer**—Engineer. Thick paper ed \$2 6d; Canadian subs \$1 16s; thin paper ed \$1 16s; Canadian subs \$1 11s 6d. Engineer, 33 Norfolk St, Strand, London, W. C.
- Eng & Contr**—Engineering and Contracting. \$2. Myron C. Clark Pub. Co., 608 S Dearborn St, Chicago.
- Eng & Min J**—Engineering and Mining Journal. \$5; single numbers 15c. Hill Pub. Co., 10th Av at 36th St, New York.
- Eng M**—Engineering Magazine. \$3; single numbers 25c. Engineering Magazine Co., 140 Nassau St, New York.
- Eng N**—Engineering News. \$5; single numbers 15c. Hill Pub. Co., 10th Av at 36th St, New York.
- Eng Rec**—Engineering Record. \$3; single numbers 10c. McGraw Pub. Co., 239 W 39th St, New York.
- Eng Soc W Pa**—Proceedings of the Engineers' Society of Western Pennsylvania. \$5; single numbers 50c. Engineers' Society of Western Pennsylvania, 2511 Oliver Bldg, Pittsburgh, Pa.
- Foundry**—Foundry. \$1; single numbers 15c. Penton Pub. Co., Penton Bldg, Cleveland, O.
- Gen Elec R**—General Electric Review. \$2; single numbers 20c. General Electric Co., Schenectady, N. Y.
- Good Roads n s**—Good Roads new series. \$2; single numbers 5c except first numbers of each month 10c. E. L. Powers Co., 180 Nassau St, New York.
- Heat & Ven**—Heating and Ventilating Magazine. \$1; single numbers 10c. Heating & Ventilating Magazine Co., 1123 Broadway, New York.
- Horseless Age**—Horseless Age. \$2; single numbers 10c. Horseless Age Co., 440 4th Av, New York.
- Ill U Eng Exp Sta Bul**—Illinois University Engineering Experiment Station. Bulletin. Univ. of Ill., Urbana.
- Illum Engr**—Illuminating Engineer. 10s 6d; single numbers 1s. Illuminating Engineering Pub. Co., 32 Victoria St, London, S. W.
- Illum Eng Soc**—Transactions of the Illuminating Engineering Society. \$5; single numbers 75c. Illuminating Engineering Soc., 29 W 39th St, New York.
- Ind Eng**—Industrial Engineering and Engineering Digest. \$2; single numbers 20c. Technical Literature Co., 120 W 32d St, New York.
- Inland Prt**—Inland Printer. \$3; single numbers 30c. Inland Printer Co., 632 Sherman St, Chicago.
- Inst E E J**—Journal of the Institution of Electrical Engineers. single numbers 3s 6d. 1s. & R. N. Spon, Ltd., 57 Haymarket, London, E. W.; Spon & Chamberlain, 123 Liberty St, New York.
- Int Marine Eng**—International Marine Engineering. \$2. Aldrich Pub. Co., 17 Battery Place, New York.
- Iron Age**—Iron Age. \$5; single numbers 20c. David Williams Co., 239 W 39th St, New York.
- Iron Tr R**—Iron Trade Review. \$4; single numbers 15c. Penton Pub. Co., Penton Bldg., Cleveland, O.

# LIST OF PERIODICALS INDEXED

- J Account**—Journal of Accountancy. \$3; single numbers 30c. Ronald Press Co., 20 Vesey St, New York.
- J Fr Inst**—Journal of the Franklin Institute. \$5; single numbers 50c. Franklin Institute, Philadelphia.
- J Ind & Eng Chem**—Journal of Industrial and Engineering Chemistry. \$6. American Chemical Society, Boston, Pa.
- Locomotive**—Locomotive. 50c; single numbers gratis; recent bound volumes \$1. Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.
- Mach**—Machinery. Engineering edition \$2; coated pa. \$2.50; single numbers 20c. Industrial Press, 140 Lafayette St, New York.
- Metal & Chem Eng**—Metallurgical and Chemical Engineering. \$3; single numbers 25c. McGraw Pub. Co., 239 W 39th St, New York.
- Metal Ind n s**—Metal Industry new series. \$1; single numbers 10c. Metal Industry, 99 John St, New York.
- Metal Work**—Metal Worker, Plumber & Steam Fitter. \$2; single numbers 10c. David Williams Co., 239 W 39th St, New York.
- Minn U Bul**—University of Minnesota. Studies in engineering. Univ. of Minn., Minneapolis.
- Munic Eng**—Municipal Engineering. \$2; single numbers 25c. Engineering Pub. Co., 702 Wabash Bldg, Indianapolis, Ind.
- Munic J**—Municipal Journal. \$3; single numbers 10c; special numbers 25c. Municipal Journal and Engineer, Inc., 59 Union Square, New York.
- Power**—Power. \$2; single numbers 5c. Hill Pub. Co., 10th Av at 36th St, New York.
- Ry Age**—Railway Age Gazette. \$5; single numbers 15c. Simmons-Boardman Pub. Co., Woolworth Bldg, New York.
- Ry Age (Mech ed)**—Railway Age Gazette, mechanical edition including the American Engineer. \$2; single numbers 20c. Simmons-Boardman Pub. Co., Woolworth Bldg, New York.
- Ry R**—Railway Review. \$1; single numbers 15c. Railway Review, 1407 Ellsworth Bldg, Chicago; 59 Church St, New York.
- Formerly Railway and Engineering Review.
- Sch Mines Q**—School of Mines Quarterly. \$1.50; single numbers 50c. School of Mines Quarterly, Columbia University, New York.
- Sci Am**—Scientific American. \$3; single numbers 10c. Munn & Co., 361 Broadway, New York.
- Sci Am S**—Scientific American Supplement. \$5; single numbers 10c. Munn & Co., 361 Broadway, New York.
- Sibley J**—Sibley Journal of Engineering. \$2; single numbers 25c. Sibley College, Cornell Univ., Ithaca, N. Y.
- Stevens Ind**—Stevens Indicator. \$1.50; single numbers 50c. Stevens Institute of Technology, Hoboken, N. J.
- Textile World**—Textile World Journal. \$3. Braddon, Lord & Naylor Co., 377 Broadway, New York.
- Formerly published as Textile World Record, monthly at \$2.
- U S Agric Bul**—United States. Dept. of Agriculture. Bulletin. Distributed free of charge. U. S. Dept. of Agriculture, Division of Publications, Washington, D. C.
- Contributions from the Bureau of Chemistry, Forest Service and Office of Public Roads are indexed.
- U S Bur For & Dom Com**—United States. Bureau of Foreign and Domestic Commerce. Special agents series. U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C.
- U S Bur Mines Bul**—United States. Bureau of Mines. Bulletin. Distributed free of charge. U. S. Bureau of Mines, Washington, D. C.
- U S Bur Mines Circ**—United States. Bureau of Mines. Miners' circular. U. S. Bureau of Mines, Washington, D. C.
- U S Bur Mines Tech Pa**—United States. Bureau of Mines. Technical paper. U. S. Bureau of Mines, Washington, D. C.
- U S Bur Stand Bul**—United States. Bureau of Standards. Bulletin. Gratis to educational and scientific institutions and to government departments. U. S. Bureau of Standards, Washington, D. C.
- Sold to individuals by the Superintendent of Documents. \$1; single numbers 25c.
- U S Bur Stand Circ**—United States. Bureau of Standards. Circular. U. S. Bureau of Standards, Washington, D. C.
- U S Bur Stand Tech Pa**—United States. Bureau of Standards. Technology paper. U. S. Bureau of Standards, Washington, D. C.
- U S Sp Cons Rep**—United States. Special consular reports. U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C.
- W Soc E J**—Journal of the Western Society of Engineers. \$3. Single numbers 50c. Western Society of Engineers, 1135 Monadnock Bldg, Chicago.
- Wis U Bul Eng S**—Bulletin of the University of Wisconsin. Engineering Section. Univ. of Wis., Madison.

# Industrial Arts Index

## A Cumulative Index to Engineering and Trade Periodicals

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- Abattoirs.** See Slaughtering and slaughter houses
- Abbeys**  
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- Aberdeen, South Dakota**  
Sewerage  
Sewage disposal plant at Aberdeen, South Dakota; with discussion. W. G. Potter. II plans W Soc B J 19:788-805, pl 1-8 O '14; Same. Eng & Contr 43:37-8 Ja 13 '15; Same cond. Metal Work 84:214-17 Ag 13 '15  
Water supply  
Rectangular fire-service reservoir. W. G. Potter. II Eng Rec 71:260-1 F 27 '15
- Ablene, Kansas**  
Politics and government  
Results obtained at Abilene, in 16 months under commission-manager government. K. Middle. Eng & Contr 42:503-4 N 25 '14
- Ability**  
See also Efficiency, Industrial; Leadership  
Ability tests  
Measuring human intelligence: standardized tests used by the Public health service. H. A. Knox. II Sci Am 112:52-3+ Ja 9 '15  
Mental tests of dementia. B. Hart and C. Spearman. Sci Am 8 80:206-8 S 25 '15  
New way of measuring mental ability. A. M. Jungmann. II diag Sci Am 8 80:140-1 Ag 28 '15  
Selecting the right occupation. Eng N 74:321-2 Ag 12 '15  
Teaching defective children. A. M. Jungmann. Sci Am 112:381 Ap 17 '15
- Ablain St. Nazaire, France**  
Church of Ablain St. Nazaire. J. P. Alaux. II Am Inst Arch J 3:337-8 Ag '15
- Abrasive wheels.** See Grinding machines; Grinding wheels
- Abrasives**  
Abrasive for grinding steel; patented by H. T. Kalmus. Met & Chem Eng 13:762-3 O 15 '15  
Abrasive products at San Francisco fair. II Iron Tr R 67:487 S 9 '15  
Abrasives; various kinds used in grinding and polishing. C. Hawke. Metal Ind n 13:101-2, 148-50 Mr-Apr '15  
Carborundum products, their manufacture and uses as abrasives and refractories. C. B. Hawke. Iron Age 96:1121 N 11 '15  
Grinding wheels for foundry use. C. F. Dietz. Iron Tr R 67:314-18+ Ag 12 '15  
Grinding wheels; history and description of various abrasive compounds. W. C. Gold. Metal Ind n 13:450-2 N '15  
Laps and lapping; abstracts. W. A. Knight and A. A. Gano. diag Am Soc M 16 J 37: 461-6 Ag '15; Iron Tr R 67:24-6 Ji 1 '15; Mach 21:976-8 Ag '15; Discussion. Am Soc M 16 J 37:469-8 Ag '15  
See also Grinding and polishing
- Absolute zero.** See Temperature, Low
- Absorbent cotton.** See Cotton, Absorbent
- Absorption**  
Absorption of glucose by bone-black. H. A. Morton. Am Chem Soc J 36:1832-5 S '14  
Reagents for use in gas analysis; alkaline pyrogallol. R. P. Anderson. diag J Ind & Eng Chem 7:587-96 Ji '15  
Specific absorption of reagents for gas analysis. R. P. Anderson. J Ind & Eng Chem 7: 587 Ji '15
- Academic freedom**  
Common sense regarding academic freedom. Eng Rec 72:35 Ji 10 '15  
Common sense regarding academic freedom. J. W. Alvord. Eng Rec 72:176 Ag 7 '15
- Accelerometer**  
Measuring shocks of vehicles and vibrations of buildings: a means for investigating important traffic problems. A. Boyer-Guillon. II diag Sci Am 8 78:364-5 D 5 '14
- Accidents**  
See also Aeronautics—Accidents; Automobile accidents; Collisions at sea; Railroads—Accidents; Shipwrecks; Street accidents; Subways—Accidents  
Accidents, Industrial  
Conditions of industrial accidents. Sci Am 8 79:179 Mr 20 '15  
Crane and chain accidents; abstract. Ind Eng 14:411-12 O '14  
Explosives and accidents. Engineer 118:531-2 D 4 '14  
Industrial accidents in Massachusetts. Sci Am 112:433 My 8 '15  
Intoxication, a cause of accidents. T. D. West. II Iron Tr R 66:713-16 Ap 8 '15; Same. Foundry 43:267-70 Ji '15  
Prevention of accidents in cotton mills. J. Calder. Textile World 49:622-4 S '15  
Prevention of infection. T. Darlington. Iron Tr R 66:770 Ap 15 '15  
Relation between accidents and inadequate lighting. Illum Eng 8:383-5 S '15  
Safety in stone quarrying; typical accidents in quarries. O. Bowles. U S Bur Mines Tech Pa 11:43-6 '15  
See also Boiler accidents; Boiler explosions; Coal mines and mining—Accidents and explosions; Coke ovens—Accidents; Cranes, derricks, etc.—Accidents; Employers' liability; Explosions; First aid in illness and injury; Foundries—Accidents; Gas manufacture and works—Accidents; Metallurgical plants—Accidents; Mine accidents; Safety devices and measures; Workmen's compensation
- Accountants**  
Contractual relations between clients and accountants. H. M. Temple. J Account 20: 261-6 O '15  
Relations of accountants and engineers in special investigations of various kinds of plants. H. C. Hopson. J Account 20:397-8 N '15
- Accountants, Public**  
Accountants and the public. H. D. Love. J Account 18:480-92 D '14  
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- Accounting profession; its demands and its future. *Id.* W. Sells. *J Account* 20:325-33 N '15
- Certified public accountants. W. H. Rand. *J Account* 19:14-20 Ja '15
- Competitive bidding. *J Account* 20:81-90, 133-6, 385-6 Ag, N '15
- National aspects of public accountancy. *J Account* 19:46-50 Ja '15
- Phases of professional ethics. J. F. Forbes. *J Account* 20:271-5 O '15
- Will we co-operate or must we incorporate? W. D. Whitecomb. *J Account* 20:376-83 O '15
- See also* Accounting; American association of public accountants

**Advertising**

- Educating the public. *J Account* 19:359-63 My '15

**Examinations**

- C. P. A. examinations. S. Walton. *J Account* 19:330-42 Mr '15
- How to pass the C. P. A. examinations. J. Hunter. *J Account* 20:34-7 Ji '15
- Ohio state board of accountancy examination. *J Account* 19:65-71 Ja '15

**Law**

- Arkansas C. P. A. law. *J Account* 19:300-3 Ap '15
- Indiana C. P. A. law. *J Account* 19:304-5 Ap '15
- Iowa C. P. A. law. *J Account* 19:369-72 My '15
- Kansas C. P. A. law. *J Account* 19:372-4 My '15
- South Carolina C. P. A. law. *J Account* 19:308-9 Ap '15
- Texas C. P. A. law. *J Account* 19:375-80 My '15

**Accounting**

- Accountant's report from the standpoint of the several parties at interest. J. S. M. Goodloe. *J Account* 20:91-103 Ag '15
- Accounting for cement packages. G. Wilson. *J Account* 19:198-205 Mr '15
- Accounting for depreciation. R. Sealy. *Elec W* 65:460-1 P 20 '15
- Accounting system for contractors. *Elec R & W Elec'n* 66:162 Ja 23 '15
- Consolidation of balance sheets in holding company accounting. A. W. Wright. *J Account* 19:21-33 Ja '15
- Cooperative organization business methods. W. H. Kerr and G. A. Nabholz. *Bull'og I' H Agric Bul* 178:1-24 '15
- Credits from the viewpoint of a certified public accountant. F. H. Hurdman. *J Account* 18:455-54 D '14
- Department store accounts. H. C. Mages. *J Account* 19:268-91 Ap '15
- Depreciation accounts. W. H. Lawton. *Elec W* 65:1678-9 Ja 26 '15
- Depreciation problems. H. Erickson. *Am Gas Inst* 170 Sept 2, 1662-1658; Discussion, 9: pt 2, 1658-83 '14
- Federal trade commission and accounting. *J Account* 20:129-33 Ag '15
- Importance of accrued accounts. J. F. Forbes. *Elec Rty J* 46:806-10 O 18 '15
- Inter-department profits. S. Walton. *J Account* 19:164-8 P '15
- Library for accounting employees. *Elec Rty J* 46:853 N 8 '15
- Overhauling capital stock. *J Account* 19:62-5 Ja '15
- Return of annual net income by corporations. W. F. Weiss. *J Account* 19:260-7 Ap '15
- Scope of accountancy. *J Account* 19:456-8 Ja '15
- Secret reserves. J. P. Joplin. *J Account* 18:407-17 D '14
- Sub-division, saving and safety. *Horseless Age* 84:869-70 D 18 '14

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counting; Railroads—Accounting; School accounting; Waterworks—Accounting

**Societies**

- Accountancy in Canada. G. Edwards. *J Account* 20:334-48 N '15
- Accounting profession in the United States. J. B. Masters. *J Account* 20:350-2 N '15

**Terminology**

- Words often used incorrectly. S. Walton. *J Account* 20:385-6 N '15

**Canada**

- Accountancy in Canada. G. Edwards. *J Account* 20:334-48 N '15

**China**

- Accountant in the Orient. R. S. Fletcher. *J Account* 20:356-60 N '15

**Accumulators.** *See* Storage batteries

**Accumulators, Steam.** *See* Steam accumulators

**Acetate of lime.** *See* Lime acetate

**Acetic acid**

- Indicator in pyroglutamic acid. J. M. Jollin. *J Ind & Eng Chem* 7:586 Ji '15
- Production of acetone from pyroglutamic acid. M. Barrin. *Il J Ind & Eng Chem* 7:927-9 N '15

**Acetic anhydride**

- Action of acetic anhydride on some benzylidene anthranilic acids. J. B. Kelsey and C. E. Tso. *Am Chem Soc J* 37:582-6 Mr '15

**Acetolysis**

- Acetolysis of carbohydrates. S. Born and J. M. Nelson. *Am Chem Soc J* 37:1763-9 Ji '15

**Acetone**

- Production of acetone from pyroglutamic acid. M. Barrin. *Il J Ind & Eng Chem* 7:927-9 N '15

**Acetylacetone-thiourea**

- Constitution of acetylacetone-thiourea. W. J. Hale and A. G. Williams. *Am Chem Soc J* 37:594-600 Mr '15

**Acetylene**

- Acetylene-oil-gas generating outfit. *Il Mach* 21:513-14 P '15
- Action of acetylene on metals. A. C. Morrison. *Sol Am* 113:487 D 4 '15
- Dissolved and self-generated acetylene. M. K. Dunham. *Iron Age* 96:343 Ag 12 '15
- Effect of acetylene on metals. *Sol Am* 113:408 N 6 '15
- Explosibility of acetylene. G. A. Hurrell and G. H. Chaffell. *U S Bur Mines Tech Pa* 112:1-12 '15
- Illumination of the substation lamp, the use of electricity of acetylene. H. L. All. *diag* 11:131-2 O '15
- Oxy-acetylene welding and cutting equipment; acetylene generators. R. W. Miller. *diag* 11:131-2 O '15
- Preparation of acetylene. C. H. Collier. *Enr* 70:262 D '14
- Vapor pressures of acetylene, ammonia and methane at temperatures below their normal boiling points. G. A. Hurrell and I. W. Robertson. *Am Chem Soc J* 37:1512-6 N '15
- Why acetylene in the combustion gas used for automatic welding. M. K. Dunham. *Mach* 21:1017-18 Ag '15

*See also* Oxyacetylene flame

**Acetylene. Substitutes for**

- New competitor of acetylene. J. P. Springer. *Mach* 21:503 Ji '15
- Possible substitute for acetylene in welding and cutting, by product of natural gas gasoline. J. P. Springer. *Re Age* (Mach ed) 89:529-30 O '15

**Acetylene burners**

- New standard light source. L. A. Jones. *Am Gas Inst* 170:251-2 O 19 '14; *Same Illus* *Eng Soc* 9:716-27; Discussion, 9:728-33 to 8 '14

**Acetylene flame.** *See* Oxyacetylene flame

**Acheson, Edward Goodrich**

- Billon, coke, mudstone and salt; career of E. G. Acheson and invention of carborundum. C. E. Williams. *Iron Tr* 11:58:487-8 Mr 4 '15

- Acid fumes**  
Removing acid fumes by blower system method. W. E. Piper. *diag Metal Work* 84: 682-3 N 26 '15
- Acidimetry.** See Volumetric analysis
- Acidity**  
Acidity and ash of vanilla extract. A. L. Winton, A. R. Albright and E. H. Berry. *J Ind & Eng Chem* 7:516-19 Ja '15  
Rate of reduction of acidity of descending waters by certain ore and gangue minerals and its bearing upon secondary sulphide enrichment. G. S. Nishihara. *Il Econ Geol* 9: 743-57 D '14
- Acids**  
Influence of temperature in acid catalysis. H. S. Taylor. *Am Chem Soc J* 37:551-7 Mr '15  
See also names of acids, e. g. Nitric acid, Sulphuric acid
- Acids, Fatty**  
Absorption and the surface tension of aqueous solution of homologous fatty acids and alcohols. M. Neidle. *Am Chem Soc J* 37: 513-15 Mr '15  
Action of finely divided silver on  $\alpha$ -bromo- and  $\alpha$ -iodopalmic acids: synthesis of two isomeric ditetradecylsuccinic acids. D. B. Jones. *Am Chem Soc J* 37:586-94 Mr '15  
Determination of the total fatty acids and other ether-soluble constituents of feed-stuffs. J. B. Luther. *J Ind & Eng Chem* 7:213-20 Mr '15  
Effect of free fatty acids upon the flash and fire points of animal fats and oils. A. Lowenstein and J. J. Vollertsen. *J Ind & Eng Chem* 7:850 O '15  
Influence of hydroxy acids and lactones upon determination of the chemical constants of fatty acids. C. A. Browne. *J Ind & Eng Chem* 7:30-4 Ja '15
- Acids, Organic**  
Addition compounds of organic acids in pairs. J. Kendall. *Am Chem Soc J* 36:1723-34 Ag '14  
Preliminary study of the conductivity of certain organic acids in absolute ethyl alcohol at 15°, 25° and 35°. B. P. Wightman, J. B. Wiesel and H. C. Jones. *diag Am Chem Soc J* 36:2243-59 N '14
- Acorus calamus, L.**  
Chemical and physical properties of oils distilled from the various parts of the plant *acorus calamus*, L. (G. A. Russell. *Am Chem Soc J* 37:2387-94 O '15
- Acoustics, Architectural**  
Acoustics of auditoriums. T. E. Phillips. *Sci Am* 112:389 Mr 27 '15  
Acoustics of auditoriums; investigation of the acoustical properties of the auditorium at the University of Illinois. F. R. Watson. *ibidlog Il Ill U Long Expt Sta Bul* 73:1-32 '14; *Sune. Sci Am* 8 78:358-9, 380-2 D 5-12 '14  
Acoustics of auditoriums; investigation of the acoustical properties of the armory at the University of Illinois. F. R. Watson. *Il Brickb* 24:257-8 O '15
- Architectural acoustics.** W. C. Sabine. *Il J Fr Inst* 179:1-20 Ja '15
- Insulation of sound.** W. C. Sabine. *diag Brickb* 24:31-6 F '15  
See also Architecture
- Acridine**  
Salts of acridine, pyridine and quiboline. L. H. Cono. *Am Chem Soc J* 36:2101-10 O '14
- Acrolein**  
Preparation of acrolein. H. J. Witzmann. *diag Am Chem Soc J* 36:1768-70 Ag '14
- Actinometer**  
Features of photo-chemistry. H. H. Mellenry. *Sci Am* 8 79:27 Ja 9 '15
- Activated sludge.** See Sewage aeration
- Addicks, Lawrence, 1878-**  
Sketch. *por Eng M* 50:206 N '15
- Adding machines.** See Calculating machines
- Addition compounds**  
Addition compounds of aldehydes and ketones with organic acids. J. Kendall and W. A. Gibbons. *Am Chem Soc J* 37:149-62 Ja '15
- Addition compounds of organic substances with sulfuric acid.** J. Kendall and C. D. Carpenter. *Am Chem Soc J* 36:2498-517 D '14
- Triphenylmethyl; the additive compounds of triphenylmethyl and some saturated hydrocarbons.** M. Gomberg and C. S. Schoepfle. *Am Chem Soc J* 37:2569-74 N '15
- Adhesives**  
See also Glue
- Adjustable wedge stop in jig and fixture design.** E. H. McCoy. *diag Mach* 21:895-9 Ji '15
- Adrenal gland**  
Therapeutic uses of preparations of the ductless glands. R. G. Torrey. *Sci Am* 8 80:122 Ag 21 '15
- Adsorption**  
Neutralization of adsorbed ions. W. D. Bancroft. *Met & Chem Eng* 13:318-19 My '15
- Advertisements**  
Advantages of hand-lettering. A. G. Brenton. *Inland Ptr* 55:753-6 S '15  
Advertisement-writer runs wild. J. H. Clayton. *Inland Ptr* 55:797-8 S '15  
Advertising for printers. J. L. Frazier. *Inland Ptr* 54:613-16 Ja '15  
Mechanical make-up of a circular. *Horseless Age* 35:331-2 Mr 10 '15  
Preparing copy for circulars. *Horseless Age* 35:298-9 Mr 3 '15  
Printers' blotters. *Inland Ptr* 55:784a-784h S '15  
Review of newspapers and advertisements. J. L. Frazier. See monthly numbers of Inland printer  
Service to the advertiser. B. O. Brown. *Inland Ptr* 55:329-32 D '15  
Try-outs in sales-making printing. J. H. Clayton. *Inland Ptr* 55:693-6 Ag '15  
Word and the printer. J. H. Clayton. See monthly numbers of Inland printer  
See also Advertising
- Advertising**  
Advertising and selling. T. M. Ambler. *Am Gas Light J* 103:60-1 Ji 26 '15  
Advertising and selling methods for concrete drain tile manufacturers. J. J. Commons. *Concrete Cem* 7:27-8 Ji '15  
Advertising car in Boston. *Il Elec Rty J* 46: 149 Ji 24 '15  
Advertising service of the weekly. *Inland Ptr* 55:476-7 Ji '15  
Boosting the advertising patronage in a local paper. C. L. Chamberlin. *Inland Ptr* 55:761-5 S '15  
Business methods for the plumber and fitter. W. A. Pink. *Dom Eng* 69:331-2; 70:42-3, 103, 369; 71:34-5, 101-2 D 12 '14, Ja 9, 23, Mr 20, Ap 10, 24 '15  
Conflict between news and advertising. J. C. Morrison. *Inland Ptr* 54:681-4 F '15  
Indirect advertising by the Frank H. Stewart electric co., Philadelphia. *Il Elec W* 65:865 Ap 3 '15  
Manufacturers and aggressive sales seekers. *Il Metal Work* 83:14-25 Ja 1 '15  
Printed matter distribution. C. Fried. *Inland Ptr* 54:350-1 D '14  
Supervision of postage stamps. *Horseless Age* 35:262 F 24 '15  
Unconscious humor in advertising. A. C. Woodbury. *Horseless Age* 35:479-80 Ap 7 '15  
Under-advertising of the steel business. G. H. Jones. *Eng M* 50:357-63 D '15; *Suno cond. Iron Age* 96:1025-7 O 28 '15  
Using newspapers to build business. *Metal Work* 83:61-5 Ja 1 '15  
Value of advertising. A. Williams. *Il Elec W* 65:1001-2 Ap 17 '15  
See also Advertisements; Business; Catalogs; Electric service companies; Advertising; Electric signs; Posters; Sales letters; Salesmen and salesmanship; Show windows
- Rates**  
Chaos of legal rates. J. C. Morrison. *Inland Ptr* 55:385-6 Je '15  
Ideal rate-card. J. C. Morrison. *Inland Ptr* 54: 401-3 D '14  
Legal advertising and legal rates. J. C. Morrison. *Inland Ptr* 55:639-41, 683-8, 809-10 Ji-Fe '15

- Advertising clubs of the world, Associated.** See Associated advertising clubs of the world
- Aeration of sewage.** See Sewage aeration
- Aeration of water.** See Water aeration
- Aerial photography.** See Photography, Aerial
- Aerial tramways.** See Cableways
- Aerial warfare.** See Aeronautics, Military; European war--Aerial operations
- Aero-electric plant.** See Electric plants
- Aero pulverizer**  
Economy of powdered fuel. *Il Eng M 48:sup4-6*  
Mr '15
- Aerodynamic laboratories**  
European aeronautical laboratories; their organization, equipment and methods of investigation. A. F. Zahm. *Il Sci Am 8 79: 328-30, 340-2* My 22-29 '15  
New aerodynamical researches. G. Eiffel. *Il Sci Am 8 80:260-1* () 23 '15  
Scientific aeronautic research; the new aerodynamic laboratory of the Massachusetts Institute of technology. J. C. Hunsaker. *Il Sci Am 8 79:364-5* Jo 5 '15
- Aerolites.** See Meteorites
- Aeronautics**  
Aeronautics in 1914. Engineer 119:6-8 Ja 1 '15; Excerpt. *Sci Am 8 79:114-15* F 20 '15  
New aerodynamical researches. G. Eiffel. *Il Sci Am 8 80:260-1* () 23 '15  
Review of the year 1914; aeronautics. *Sci Am 112:7* Ja 2 '15  
Scientific aeronautic research; the new aerodynamic laboratory of the Massachusetts Institute of technology. J. C. Hunsaker. *Il Sci Am 8 79:364-5* Jo 5 '15  
Using air for ballast. R. H. Upson. *Sci Am 8 80:147* Ag 28 '15  
See also Aerodynamic laboratories; Aeroplane motors; Aeroplanes; Balloons and airships; Flying boats; Hydroplanes
- Accidents**  
Another aviator perishes; Lincoln Beachey. *Sci Am 112:288* Mr 27 '15  
Howident, therapist perished. G. P. Scriven. *Sci Am 112:217* Mr 6 '15
- Signals**  
Communicating with aircraft. *Sci Am 8 80: 355* D 4 '15  
Signaling apparatus used by airships. *Il Sci Am 113:265* S 25 '15
- Aeronautics, Military**  
Aerial range-finding with electrical currents. *Il Sci Am 113:377* () 30 '15  
Aerial scouting. H. Hammerman-Phillips. *Eng M 60:101-3* () 15  
Aerial warfare and the weather, map. *Sci Am 8 80:355* () 23 '15  
Aeronautic lessons of the European war. C. Dienstbach. *Il Sci Am 112:627* Jo 28 '15  
Aeronautics in 1914. Engineer 119:7-8 Ja 1 '15; Excerpt. *Sci Am 8 79:114* F 20 '15  
Aeroplane darts and fire darts. *Il Sci Am 8 79:124* F 20 '15  
Aircraft artillery and bomb-dropping. C. Dienstbach. *Il Sci Am 112:126* F 6 '15  
Airship in the field. *Il Sci Am 8 79:120* Mr 27 '15  
American aeroplanes for warfare. O. A. Hickinson. *Il Eng M 49:641-61* Ag '15  
Captive balloons on the French front. N. Trunlow. *Sci Am 113:181* Ag 28 '15  
Communicating with aircraft. *Sci Am 8 80: 355* D 4 '15  
European war from an engineer's standpoint. J. B. C. Kershaw. *Il diag Eng M 48:498-507* Ja '15  
Flying machines of the warring powers. J. J. Ide. *diag Sci Am 112:226-7* Mr 6 '15  
Government's competition for a naval dirigible. C. Dienstbach. *Sci Am 112:408* My 1 '15  
Gun and the aeroplane. R. Young. *Il Sci Am 8 80:276* () 30 '15  
Gyrotelescope. C. Dienstbach. *Il Sci Am 113: 368* () 23 '15  
How the war has modified the aeroplane. L. d'Orey. *Il diag Sci Am 112:196-7* S 4 '15  
In flight over the enemy. *Sci Am 111:481* D 5 '15
- Mechanical aids for air scouts.** *Il Sci Am 112:175* F 20 '15  
Military value of airships. *Sci Am 112:391* Ja 30 '15  
Our first naval dirigible. C. Dienstbach. *Il Sci Am 113:44* Ji 10 '15  
Recent progress in military aeronautics. S. Weber. *J Fr Inst 180:137* 48 () '15  
Shells for destroying airships. *Il Sci Am 112: 161* F 13 '15  
Signaling apparatus used by airships. *Il Sci Am 113:265* S 25 '15  
Steel darts. *Sci Am 112:156* F 13 '15  
Torpedo attack from the air. *Sci Am 111:523* D 26 '14  
Use of balloons during the siege of Paris, 1870-1; table and charts showing number of ascensions and results. *Sci Am 8 80:229* () 9 '15  
War experiences of an air scout. F. C. Hild. *Il Sci Am 111:520* (); 112:20 (); 51 (); D 26 '14; Ja 9 '15  
Zeppelin. *Sci Am 112:8* Ji 3 '15  
Zeppelin and aeroplane raid. Engineer 120: 255-6 S 17 '15  
See also European war--Aerial operations; Military reconnaissance
- Aeronauts.** See Aviators
- Aeroplane factories**  
Where wings are made for fighting men. F. Engelbachner. *Il Sci Am 112:204* S 8 '15
- Aeroplane motors**  
Aeroplane engines; regulated and details of design. N. Macdonell. *Il Sci Am 113:250* I () 16 '15  
Big eight for aeroplanes. *Il Automobile 32: 469* Mr 11 '15  
Dual aeronautical motor. *diag Engineer 118: 132* Ji 31 '14; Same. *Sci Am 8 18:33* D 19 '14  
Dual engine aeroplane. *Sci Am 111:461* D 6 '14  
French plants make V motors. W. F. Huelley. *Il Automobile 31:729* Ji 11 '15  
History of the twelve cylinder motor. E. W. Walford. *Il Automobile 32:500* I Mr 18 '15  
Progress in the construction of aeroplanes. N. Macdonell. *Il The class Age 50:504* Jo 16 '15  
Remont aviation twelve possibly for cars. *Automobile 31:54* S 9 '14  
Twin six engines for aeroplanes. F. Engelbachner. *Il Sci Am 113:271* S 13 '15
- Aeroplane stability and stabilizers**  
Gyrotelescope. C. Dienstbach. *Il Sci Am 113: 368* () 23 '15
- Aeroplanes**  
Aeronautical timber, abstract. 1-1; 11-rom. *Am Soc M 17:4* 37 '15. () 15  
Aeronautics in 1914. Engineer 119:6-7 Ja 1 '15; Excerpt. *Sci Am 8 79:114* F 20 '15  
Alcock and aeroplanes. *Il Sci Am 112:281* Ap 24 '15  
American aeroplanes for warfare. O. A. Hickinson. *Il Eng M 49:641* 61 Ag '15  
Evolution of the British engine; how a new type was developed into an aeroplane. *diag Sci Am 8 79:74* S 15 '15  
Flying machines of the warring powers. J. J. Ide. *diag Sci Am 112:226* 71 Mr 6 '15  
How the war has modified the aeroplanes. L. d'Orey. *Il diag Sci Am 112:196* 7 S 4 '15  
Hulls for aeroplanes; abstract. H. C. Richardson. *diag Am Soc M 16:3* 27 291 S 15 '15  
Italian military aeroplanes. J. J. Ide. *diag Sci Am 8 79:301* My 3 '15  
Lincoln Beachey monoplane; details of a complete design that failed from weakness. *diag Sci Am 8 79:237-8* Ap 10 '15  
New type of aeroplanes, an even keel flyer. T. A. E. Lake. *Il diag Sci Am 8 79:1* S 15 '15  
Thomas military tractor biplane. *Il Sci Am 8 79:264* Ap 17 '15  
Wing data and analysis for a staggered biplane. A. F. Zahm. *diag J Fr Inst 179:642-79* I '14; Abstract. *Am Soc M 15:3* 27:56-7 Ja '15  
See also Aeronautics; Aeroplane motors; Hydroplanes

**Aeroplanes—Continued****Equipment**

- Chest telephone for aeroplane pilots. *Il Sci Am* 113:255 S 18 '15; *Elec R & W Elec'n* 87:211-12 J1 31 '15  
Instruments used on aeroplanes. *Sci Am S* 80:23 J1 10 '15

**Aeroscope**

- Aeroscope a novel feature of Panama-Pacific exposition. *Il Eng Rec* 71:423 Ap 3 '15  
Aeroscope at the Panama-Pacific exposition. *Il Elec Ry J* 46:31-2 J1 3 '15  
Anchored airship; structural amusement device weighing 620 tons. *Il Iron Age* 95:184 Ja 21 '15  
Joy riding in the sky. *Il Sci Am* 112:344 Ap 10 '15

**Afghanistan****Commerce**

- British India. *Il U S Sp Cons Rep* 72:533-60 '15

**Agency**

*See also* Commercial law; Contracts

**Agitators. See** Dorr agitators; Trent agitators**Agricultural chemistry**

- Effect of certain organic compounds on wheat plants in the soil. *M. W. Upson and A. R. Powell. Il J Ind & Eng Chem* 7:420-2 My '15  
*See also* Ammonia; Fertilizers and manures; Soil analysis; Soils

**Agricultural education**

- Agricultural education in Prussia--the German ideal. *Am Ind* 15:23 J1 '15  
Agricultural instruction for the millions. *Sci Am* 113:461 N 27 '15

**Agricultural exhibitions**

- Royal agricultural show at Nottingham. *diag Engineer* 120:8-10, 30-1, 58-9 J1 2-16 '15

**Agricultural machinery**

- British India; farm-Implement trade. *U S Sp Cons Rep* 72:336-53 '15  
Farm machinery association inquiry. *Iron Age* 95:92 My 6 '15  
Milling the soil; improving on the old-fashioned plow. *L. W. Ellis. Il Sci Am* 112:436 My 8 '15  
Progress in small farm tractors. *L. W. Ellis. Il Sci Am* 112:306-8 Ap 3 '15  
Royal agricultural show at Nottingham. *Il diag Engineer* 120:58-9 J1 16 '15  
Small farm tractors. *Sci Am* 112:304 Ap 3 '15  
Smithfield club show. *Il diag Engineer* 118:551-3 D 11 '14  
*See also* Motor plows; Tractors

**Manufacture**

- Electricity in implement manufacturing. *W. J. Kyle. Il Elec R & W Elec'n* 67:97-101 J1 17 '15

**Agricultural pests**

- Snakes and their value to the agriculturist. *R. W. Shufeldt. Il Sci Am S* 80:344-5 N 27 '15

**Agriculture**

- New internationalism in agriculture. *Il. C. Price. Sci Am S* 80:109 Ag 14 '15  
*See also* Clearing of land; Demonstration farms; Drainage; Electricity on the farm; Fertilizer; Farm buildings; Feeding and feeding stuffs; Fertilizers and manures; Forage plants; Forests and forestry; Irrigation; Plant breeding; Reclamation of land; Seeds; Silos; Soils and landings beginning soil; Trees; Woodlots; also headings beginning Agricultural, and names of special products

**Accounting**

- Cost of producing farm crops. *O. R. Martin. J Account* 19:245-59 Ap '15

**Chile**

- That farm. *Eng & Min J* 99:275-6 F 6 '15

**Germany**

- Agriculture in Germany and significant facts about potato. *Sci Am S* 80:187 S 11 '15  
German agriculture in war time. *Sci Am* 112:216 Mr 6 '15

**India**

- British India; principal crops. *U S Sp Cons Rep* 72:318-35 '15

**Palestine**

- Farming in Palestine. *E. F. Beaumont. Il Sci Am* 113:162-3 Ag 21 '15

**United States**

- Does irrigation pay? *F. H. Newell. Eng Rec* 73:384-5 S 25 '15  
Growing hemp in America. *C. R. Dodge. Il Sci Am S* 79:308-9 My 15 '15

**Air**

- Electric strength of air. *J. B. Whitehead. Am Inst E R* Fro 34:843-65 My '15; Discussion. 34:2997-3005 D '15  
Larger ions in the air. *J. A. Pollock. Sci Am S* 80:76 J1 31 '15  
Properties of saturated air. *W. D. Ennis. Power* 41:402-4 Mr 23 '15  
*See also* Aeronautics; Argon; Atmosphere; Atmospheric pressure; Compressed air; Humidity; Ionization; Liquid air; Mine air; Oxygen; Ozone; Ventilation; also Air conditions; Air flow, and other headings beginning Air

**Analysis**

- Determination of gasoline vapor in air. *G. A. Burrell and I. W. Robertson. diag J Ind & Eng Chem* 7:112-13 F '15  
Dust and bacteria content of city air. *M. C. Whipple, Hunt & Ven* 12:27-33 S '15  
Exact determination of sulphur dioxide in air. *J. L. Murston. Eng & Min J* 100:726-7 O 30 '15

**Air, Compressed. See** Compressed air**Air, Liquid. See** Liquid air**Air brake association**

- 22d annual convention, Chicago, May 4-7. *diag Ry Age (Mech ed)* 89:295-9 Jo '15  
22d annual convention, Chicago, May 4. *Ry R* 56:630-3 My 8 '15  
22d annual convention, Chicago, May 4-7. *Ry Age* 58:1015-17 My 14 '15

**Air brake hose**

- Conservation and protection of air brake hose. *Ry R* 56:303-5 Mr 6 '15  
Subers process. *Il Ry Age (Mech ed)* 89:184 S '15

**Air brakes**

- Air brake association convention. *diag Ry Age (Mech ed)* 89:295-9 Jo '15  
Air brake association 22d annual convention. *Ry Age* 58:1015-17 My 14 '15  
Air brake association 22d annual convention. *Ry R* 56:630-3 My 8 '15  
Air cooling plant, New York Central R. R. Mott Haven yard, New York. *M. Purcell and M. K. Gannon. Il plans Ry R* 56:703-5 My 22 '15  
Diaphragm-operated triple valve. *diag Ry Age (Mech ed)* 89:92-4 F '15  
Electric-air brake adopted by Pennsylvania R. R. *Eng N* 73:627 Ap 1 '15  
Electro-pneumatic brake. *W. V. Turner. Ry Age* 59:511 S 17 '15; Same. *Ry Age (Mech ed)* 89:507-8 O '15  
Handling of the air brakes. *Ry Age (Mech ed)* 89:509-10 O '15  
Improvement in the handling of air brakes on modern trains. *Ry R* 57:360-1 S 18 '15  
Inspection and maintenance of air brakes on freight cars. *Il Larnaby. Ry Age (Mech ed)* 89:406 Ag '15  
One hundred per cent operative brakes in freight service. *G. H. Wood and H. C. Wheeler. map Ry R* 57:54-7 J1 10 '15  
Westinghouse electro-pneumatic air brake on the Pennsylvania railroad. *Il. T. Wade. Il plan Sci Am* 112:594 Jo 12 '15  
*See also* Air brake association; Air brake hose

**Testing**

- Testing devices for air brakes. *diag Ry Age (Mech ed)* 89:470 S '15

**Air brush painting. See** Painting, Industrial**Air compressors**

- Air-compressor cooling with water barrels. *J. Simmons. Il Eng & Min J* 100:185 J1 31 '15  
Air compressor for prospecting. *Il Eng & Min J* 100:844 N 20 '15  
Air compressor of the portable type. *Il Iron Age* 86:1104 N 4 '15

**Air compressors—Continued**

- Air compressor valve of steel strips. *II* Iron Age 95:1010 My 6 '15
- Choosing air compressors for activated-sludge tanks. *C. H. Nordell. Eng N 74:904-6 N 4 '15*
- Cold-air intake duct for air compressors. *R. S. Bayard. Power 41:715-16 My 25 '15; Same. Eng & Min J 100:13-14 J 13 '15*
- Combined air compressor and vacuum pump. *II* *Engng Engineer 119:143 F 5 '15*
- Compressor for light-weight, low-floor cars. *II* *diag Elec Ry J 48:681 O 2 '15*
- Cylinder ratios for air compressors. *F. W. Salmon. Power 41:472-3 Ap 6 '15*
- De Laval high speed blower and centrifugal air compressor. *II* *diag Ry Age (Mech ed) 89:374-6 J 1 '15; Iron Age 98:136-7 J 15 '15; Power 42:147 Ag 3 '15*
- Description of air compressor in the plant of the Nungesser carbon & battery co., Cleveland. *II* *Met & Chem Eng 13:460-1 J 1 '15*
- Efficiency of air compressors and the measurement of air flow. *J. H. Rider. Eng & Min J 99:1118 Je 26 '15*
- Forty-million-revolution compressor-valve test. *II* *Power 41:537-8 Ap 20 '15*
- Friction loss in air compressors. *Sibley J 29:195-6 Mr '15*
- Graphical tables for calculating reciprocating compressors; abstract. *Immerschiff. Am Soc M E J 37:553-4 S '15*
- How one operator controlled an air-compressor motor and used it to drive a direct-current generator. *H. R. Smith. diag Elec W 86:408 Ag 28 '15*
- Imperial portable air compressor. *II* *Power 41:86 Ja 19 '15*
- Ingersoll-Rand high efficiency air compressor. *II* *Power 41:888 Je 29 '15; Eng & Contr 43:524-5 Je 9 '15; Iron Age 95:1295-7 Je 10 '15; Iron Tr R 56:1116 Je 3 '15*
- Investigation of a gas driven air compressor plant at the mine Consolidation. *Am Soc M E J 37:112-13 F '15*
- Jackson rotary air compressor. *II* *Eng & Min J 100:643 O 18 '15*
- Molding air compressors on jolt-rammers. *II* *Foundry 43:18-19 Ja '15*
- New volume regulator for air compressors; with discussion. *H. Wikander. diag Am Soc M E J 37:170-4 Mr '15*
- New York tunnel power plants. *II* *plans Eng N 74:700-1 O 7 '15*
- Palmetto packing for air compressors. *II* *Int Marine Eng 20:373 Ag '15*
- Plate valves for high-speed air compressors. *G. J. MacFadden. diag Power 11:356-8 Mr 18 '15; Same cond. Eng M 49:200-1 My '15*
- Points about air compressors of practice. *R. H. Rowland. Power 42:187 20 Ag 10 '15*
- Portable gasoline engine air compressors. *II* *Eng N 73:126 Ja 21 '15; Eng & Min J 99:241 Ja 30 '15*
- Turbo-blowers and turbo compressors. *O. H. Wunderlich. Power 42:280 Ag 21 '15*
- Two stage single cylinder compressor; abstract. *diag Am Soc M E J 37:342-3 Je '15*
- See also* Air pumps; Compressed air

**Testing**

- Testing of air compressors. *C. E. Davison. diag Engineer 119:623-3 Ja 25 '15*

**Air conditions**

- Air conditioning; abstract. *J. I. Lyle. Am Soc M E J 37:296 My '15*
- Air conditioning in a moving picture laboratory. *II* *plans Heat & Ven 12:20-6 F '15*
- Air examination. *M. W. Franklin. J Ind & Eng Chem 6:860-5 O '14; Same; with discussion. Am Soc Heat & V 6:29387 84 '14*
- Air we breathe—a study of temperature, humidity and dust content. *T. Hubbard. Heat & Ven 12:22-5 Ja '15*
- Dust and bacteria content of city air. *M. C. Whipple. Heat & Ven 12:27-33 S '15*
- Measure of comfort in factories; construction and use of the kalathermometer. *J. A. Menger. II Heat & Ven 12:24-7 S '15*
- More about pure air. *Metal Work 83:150 Ja 22 '15*
- New York state commission on ventilation; high temperatures have marked physiological effect. *Elec Ry J 41:1230 O 19 '14*

- Physiological effect of natural gas. *G. A. Burrell and G. G. Oberfell. U S Bur Mines Tech Pa 109:15-19 '15; Same. Sci Am S 80:303-4 N 6 '15*
- Progress of laboratory experiments with air. *F. S. Lee. Metal Work 84:338-9 J 8 '15*
- Regulating temperature and humidity in appraising cotton goods. *II* *diag plan Textile World 48:380-2 Ja '15*
- Relation of ventilation to bodily health. *T. R. Crowder. Metal Work 84:116-17 J 12 '15*
- Results of physiological and psychological observations during the first year's experiments; abstract. *D. D. Kimball and G. T. Palmer. Power 41:177 12 '15*
- Savo air moistener. *II* *Heat & Ven 12:52-3 S '15*
- Studies in air cleanliness. *G. C. Whipple and M. C. Whipple. Heat & Ven 12:23 S J 1 '15*
- See also* Air purification; Cooling; Dust prevention; Dust removal; Humidity; Smoke prevention; Ventilation

**Air ducts. See Air pipes****Air engines**

- Hot-air engine. *G. E. Duryea. II Sci Am 113:165 J Ag 21 '15*
- Using a pneumatic drill motor as a hoisting engine. *V. T. Kropidowski. diag Ry Age 59:380 N 10 '15*
- See also* Compressed air

**Air filters**

- Air cleaning apparatus for the ventilation of generators and transformers. *W. Baum. II diag Gen Elec R 18:301 12 Ag '15*
- Air filters for turbo-generators. *II* *diag Engineer 119:21-2, 35-7, 81-3 Ja 1 8, 22 '15*
- See also* Air washers

**Air flow**

- Action of an air jet on the surrounding air; abstract. *T. Triebel. Am Soc M E J 37:262 5 Ms '15*
- Best way to take anemometer readings; committee report. *Am Soc Heat & V 6:19:202-7 '15*
- Efficiency of air compressors and the measurement of air flow. *J. H. Rider. Eng & Min J 99:1118 Je 26 '15*
- Flow of air and steam through orifices. *A. L. Westcott. diag Power 42:514 16 J 12 '15*
- Flow of air in heating and ventilating ducts, including an example in duct design. *L. A. Harding. Am Soc Heat & V 6:19:219 27 '15*
- Frictional losses in elbows and ducts. *G. A. Fuller. diag Metal Work 83:371 2 J 1 '15*
- Lecture course on elements of heating. *G. A. Fuller. Metal Work 83:371 2, 33:374-6, 393-5 Ja 2 '14, Ap 16, My 1 '15*
- Loss of pressure due to elbows in the transmission of air through pipes or ducts. *F. L. Dancy. Am Soc Heat & V 6:19:356 18 '15*
- Measurement of air flow; abstract. *V. K. Oliver. Am Soc M E J 37:347 Je '15, 195 caption. E. A. Hill. Heat & Ven 12:74 6 O '15*
- Simplified graphical or analytical sources for the determination of dimensions of pipes in ventilating and heating installations; abstract. *Hubber and Hubbard. Am Soc M E J 37:352 7 O '15*
- Standardization of the use of the Pitot tube; report of committee. *diag Am Soc Heat & V 6:20:219 15 '14*
- See also* Anemometers; Gas flow; Steam flow

**Air lifts**

- Air lift efficiency. *E. M. Ivanc. diag Power 41:843 6 Je 2 '15*
- Air lift pumping. *P. H. Bergersen. Hildey J 29:369 71 Ms '15; Abstract Met & Chem Eng 13:597 Ag '15*
- Air lift pumps in a central station load. *diag Elec R & W Elec 66:1191 2 Je 26 '15*
- Draining a swamp by air lifts. *Eng & Min J 100:102 R 4 '15*
- Installation and operation of air lift pumping system. *C. M. Wetherill. Eng & Contr 43:422 3 My 12 '15*
- Proper installation of air lift pumps. *A. H. Ford. Eng & Contr 12:238-9 Mr 17 '15*
- Pumping water by compressed air. *G. C. Thompson. diag Am Gas Light J 102:251 2 Ap 19 '15*

**Air lifts—Continued**

Trouble with an air lift. E. M. Ivans. *diag*  
Power 40:890-1 D 32 '14

**Air liquefaction.** See Liquefaction of gases

**Air meters**

See also Anemometers; Compressed air meters

**Air permeability of building materials; abstracts.**

H. von Thielmann. *Am Soc M E J* 37:477-8  
Ag '15; Heat & Ven 12:44-5 S '15

**Air pipes**

Canvass air duct in tunnelling. *Eng N* 74:177-8  
Jl 23 '15

Flow of air in heating and ventilating ducts,  
including an example in duct design. L. A.  
Harding. *Am Soc Heat & V B* 19:219-27 '13  
Loss of pressure due to elbows in the trans-  
mission of air through pipes or ducts. F. L.  
Busey. *Am Soc Heat & V B* 19:366-76 '13

**Air pumps**

Cleaning air pumps. W. R. Johnson. *plan Ry*  
Age (Mech ed) 89:83 F '15

Device for placing air pumps. W. S. Whit-  
ford. *Il Ry Age (Mech ed)* 89:581-2 N '15

High vacuum reciprocating air pump. *diag*  
*Engineer* 118:563 D 11 '14

Modern power-house condensing plant. A.  
Arnold. *Inst E E J* 53:848-50 Je 15 '15

Oiling air pump air cylinders. E. A. Murray.  
*diag Ry Age (Mech ed)* 89:408 Ag '15

Reboring air pump cylinders. J. A. Jesson.  
*diag Ry Age (Mech ed)* 89:138 Mr '15

Repairing 9% in. air pump cylinder heads.  
B. Grady. *diag Ry Age (Mech ed)* 89:530  
O '15

Rotary valveless air-pump. *Il diag Power* 42:  
355-6 S 7 '15

Special chucks for air pump repairs. W. W.  
Moffo. *Il Ry Age (Mech ed)* 89:183 Ap '15

Test of turbo air pump. *Il diag Power* 41:  
412-3 Mr 30 '15

See also Air compressors; Air lifts

**Air purification**

Purification and sterilization of air. S. Born  
and W. R. Carthaus. *Il J Ind & Eng Chem*  
7:233-6 Mr '15

See also Air filters; Air washers; Dust re-  
moval; Smoke prevention

**Air resistance**

How rifle bullets fly. J. C. Crossman. *Il Sci*  
*Am* 113:24-7 Jl 3 '15

Why speed increases fuel consumption. Auto-  
mobile 33:127-8 S 2 '15

**Air sampling**

Rock-dust sampler. O. Ruhl. *Il Eng & Min J* 99:  
238 Ja 30 '15

**Air shafts**

Air shaft illumination as studied by models.  
C. H. Sharp. *Illum Eng Soc* 9:598-610 no 7  
'14

**Air testing**

Test for dirt in an air supply. S. A. Moss. *Il*  
*Gen Elec* 18:622-5 Jl '15

Testing the air supplied to turbo-generators.  
*Engineer* 120:139-40 Ag 6 '15

See also Air Analysis; Air sampling

**Air washers**

Air cleaning apparatus for the ventilation of  
generators and transformers. W. Faum. *Il*  
*diag Gen Elec* 18:891-12 Ag '15

Air washers for turbine generators. *Il Eng M*  
49:203-3-4 Je '15

Ideal air washer. *Il Heat & Ven* 12:56-8 Mr  
'15

Lecture course on elements of heating. C. A.  
Fuller. *Metal Work* 84:583 J. N 5 '15

Spray-type air washers and coolers for New  
York station. *Il diag Elec W* 66:340-50 F 6  
'15

Standardizing a method of testing air washers;  
report of committee, with discussion. *Am*  
*Soc Heat & V B* 20:425-41 '14

Supplying air to generators at constant temper-  
ature and humidity. *Il diag Elec W* 66:292  
Jl 10 '15

Test for dirt in an air supply. S. A. Moss. *Il*  
*Gen Elec* 18:622-5 Jl '15

Test of Kansas City air washer. *Il Elec Ry J*  
46:240-1 Ag 7 '15

See also Air filters

**Air washing**

Recent tests on recirculation of washed air.  
G. L. Larson. *Il Metal Work* 84:675-7+ N  
26 '15; Abstract. *Am Soc M E J* 37:723-4  
D '15

See also Air filters; Air purification; Dust  
removal; Gas cleaning; Smoke prevention

**Airships.** See Balloons and airships

**Akron, Ohio**

**Bridges**

Ornamental bridge at Akron built of slag con-  
crete. *Il Eng N* 74:760-70 O 21 '15

**Churches**

Trinity Lutheran church. I. T. Frary. *Il plans*  
*Arch Rec* 37:252-67 Mr '15

**Sanitary affairs**

Akron is building sewage and garbage dis-  
posal plants. *plan Eng Rec* 71:53 Ja 9 '15

Sewage disposal plant for Akron. *Il diag plan*  
*Munic J* 39:71-4, 113-14 Jl 15-22 '15

Sewage-treatment and garbage-reduction  
works for Akron, Ohio. *Eng N* 73:147 Ja 28  
'15

**Streets**

Examination of Akron pavements. *Munic J* 37:  
954-5 D 31 '14

**Water supply**

Akron's water purification plant. *diag Munic*  
*J* 38:735-8 My 27 '15

Low-lift centrifugal pumps at Akron will oper-  
ate under unusually varied conditions. F. A.  
Barbour. *Il Eng Rec* 71:580-1 My 8 '15

**Alabama Great Southern railroad**

Finances of the Alabama Great Southern. *Ry*  
*Age* 57:1034 D 4 '14

**Alabama power company**

Foundations for transmission line towers and  
tower erection. W. E. Mitchell. *diag plan Am*  
*Inst E E Pro* 34:187-92 Je '15; Abstract.  
*Elec W* 66:10 Jl 3 '15

**Alarms, Electric.** See Electric alarms

**Alaska**

Alaskan railroad surveys. D. L. Reaburn. *Il*  
*Eng N* 73:104-6 Ja 21 '15

Alaska's road and bridge builders face snow,  
frozen ground and glacial floods. C. E. Ted-  
gerton. *Il map Eng Rec* 71:764-6 Je 19 '15

**Bridges**

Construction and cost data on some highway  
bridge work in Alaska. F. A. Pope. *Eng &*  
*Contr* 42:387-8 O 21 '14

**Description and travel**

Dawson to Nome. H. E. Chuko. *Il Eng & Min*  
*J* 98:1121-5 D 26 '14

**Industries and resources**

Alaskan mining in 1914. *Eng & Min J* 99:116-  
19 Ja 9 '15

Chignik bay, Alaska, coal fields. W. R. Crane.  
*Il map Colliery* 35:457-61 Ap '15

Kenai district. *Eng & Min J* 100:676 O 23 '15

Petroleum fields of Alaska. A. H. Brooks. *maps*  
*Am Inst Min* 10 Bul 98:199-207 F '15

Tin mining in Alaska. *map Eng & Min J*  
100:838-9 N 20 '15

Winter mining at Fairbanks. H. L. Ellis. *Il*  
*diag Eng & Min J* 100:707-11 O 30 '15

**Law**

United States mining statutes annotated.  
J. W. Thompson. *Il S Bur Mines Bul* 94:  
pt 2, 861-913 '15

**Railroads**

See Railroads Alaska

**Albany, New York**

**Railroads**

Delaware & Hudson terminal at Albany, N. Y.  
*Il plan Ry Age* 59:558-60 Jl 9 '15

Difficult grade crossing elimination in Al-  
bany, N. Y. *Il diag plan Ry Age* 59:961-3  
N 19 '15

**Sewerage**

Albany sewage-disposal works. J. H. Greg-  
ory. *plans Eng N* 74:692-5 O 7 '15

- Albany, New York—Sewerage—Continued**  
 Albany's sewage treatment plant; sixteen Imhoff tanks and eight sludge beds, 11 dings Muncie J 38:837-40 Je 17 '15
- Alberta**  
**Industries and resources**  
 Correlation and geological structure of the Alberta oil fields, D. B. Dowling, map Am Inst Min En Bul 102:1355-64 Je '15
- Albumin**  
 Coagulation of albumin by electrolytes, W. D. Bancroft, Met & Chem Eng 13:317-18 My '15  
 How much albumin is found in our diet? M. Hindede, Sci Am 8 79:327 My 22 '15  
 New method of producing albumen, Sci Am 113:120 Ag 7 '15
- Alcalá De Henares, Spain**  
**Architecture**  
 Palacio arzobispal, now Archivo historico, A. G. Byrne, B Brickh 21:85-8 Ap '15
- Alcohol**  
 Alcohol and fodder from wood, Sci Am 113: 361 O 23 '15  
 Determination of methyl and ethyl alcohol in spirit varnishes, G. W. Knight and C. T. Lincoln, J Ind & Eng Chem 7:337-43 O '15  
 Hardwood distillation industry in America, E. H. French and J. R. Withrow, B Met & Chem Eng 13:30-9 Ja '16; Same, J Ind & Eng Chem 7:47-55; Discussion, H. C. Chute, 7:55-6 Ja '16  
 Manufacture of ethyl alcohol from wood waste; the hydrolysis of white spruce, F. W. Krossmann, J Ind & Eng Chem 7:2920-2 N '16  
 Manufacture of ethyl alcohol from wood waste; western larch as a raw material, F. W. Krossmann, J Ind & Eng Chem 7: 923-3 N '15  
 Occurrence of methyl alcohol in cornilage, B. D. Hart and A. R. Lamb, Am Chem Soc J 38:2114-18 O '14  
 Preliminary experiments on the effect of temperature control on the yield of products in the destructive distillation of hardwood, R. C. Palmer, dings J Ind & Eng Chem 7: 663-9 Ag '15
- Alcohol, Denatured**  
 Conditions of the Russian treasury department competition on the industrial uses of alcohol, J Ind & Eng Chem 7:637-8 Jl '15  
 Utilization and denaturing of spirit, Engineer 120:181 Ag 20 '15
- Alcohol as fuel**  
 Fuel becomes French government monopoly in 1917, Automobile 33:486 S 9 '15  
 Manufacture of ethyl alcohol as a fuel for internal combustion engines, B. O. Jenkins, Sci Am 111:509 D 19 '14
- New alcohol fuel, Engineer 119:581 Je 11 '15**
- Alcoholic solutions. See Solution (chemistry)**
- Alcohols**  
 Absorption and the surface tensions of aqueous solution of homologous fatty acids and alcohols, M. Nettle, Am Chem Soc J 37:513-15 Mr '15
- Aldehydes**  
 Addition compounds of aldehydes and ketones with organic acids, J. Kendall and W. A. Gibbons, Am Chem Soc J 37:149-62 Ja '16  
 Isolation of crystalline *dl*-glyceric aldehyde from a syrup obtained by the oxidation of glycerol, E. J. Witzemann, Am Chem Soc J 36:2223-34 O '14  
 Synthetic preparation of *dl*-glyceric aldehyde, E. J. Witzemann, Am Chem Soc J 36:1904-16 N '14
- Alfalfa**  
 Enzymes present in alfalfa; alfalfa investigation, C. A. Jacobson and A. Holmes, Am Chem Soc J 36:2170-82 O '14
- Algae**  
 Algae growths cover Atlanta sewage filter, C. C. Hommon, B Eng Rec 72:335 S 11 '15
- Allen labor. See Labor laws**
- Alkali soils**  
 Investigation of the durability of cement drain tile in alkali soils, R. J. Wig and G. M. Williams, dings pls U S Bur Stand Tech Pa 44:1-56 '15; Excerpts, Concrete Cem 7:115-7 O '15
- Alkalies**  
 Binary and ternary systems of the nitrates of the alkali and alkaline earth metals, W. D. Harkins and G. L. Clark, Am Chem Soc J 37:1816-28 Ag '15  
 Commercial alkalies, their strength and value, Textile World 43:679-82 S '15  
 Search for an alkali element of higher atomic weight than cesium, G. P. Baxter, Am Chem Soc J 37:280-8 N '15  
*See also* Alkali soils; Ammonia; Concrete, Effect of alkalies on; Potassium; Sodium
- Alkalimetric solutions**  
 Arsenious oxide as an alkalimetric standard, A. W. C. Menzies and P. N. McCarthy, Am Chem Soc J 37:2021-4 S '15  
 Standardization of alkalimetric solutions, P. D. Dodge, J Ind & Eng Chem 7:29-30 Ja '15
- Alkaloids**  
*See also* Veratrine
- Alleys**  
 Alley problem, C. B. Hall, Eng N 74:871 N 4 '15  
 Concrete alley paving in Chicago, S. E. Bates, B Muncie Eng 19:111 S O '15
- Allys-Chalmers manufacturing co.**  
 Facts about Allys-Chalmers case, Iron Tr R 56:918-50 My 13 '15
- Allotropy**  
 Manganese oxide and the allotrope theory, A. Sauveur, B Am Inst Min En Bul 93:2133-49 S '14; Abstract, Iron Tr R 55:1002 S 26 '14; Discussion, Am Inst Min En Bul 100: 787-90 Ap '15  
 Metastability of metals, A. Vossmer, Met & Chem Eng 13:535 G S 1 '15  
 Physical changes in iron and steel, Engineer 120:15 Jl 2 '15  
*See also* Critical point
- Alloys**  
 Acid reacting alloy to replace platinum in the construction of a bomb calorimeter, E. W. Parr, B Am Chem Soc J 37:545-52 N '15  
 Bearing metal of low elastic limit, Iron Age 95:1016 My 6 '15  
 Brimmed hardness, testing of non ferrous alloys, V. Skillman, Metal Ind n 12 423-4 O '14; Same, Foundry 43:111-12 Mr '15  
 Choice of alloys for water work design, H. Carpenter, Am Water Works Assn J 2 341-5 Jo '15; Same abstr, Eng & Contr 43:333 4 Ap 11 '15  
 Determination of critical point in iron, steel and alloys, B Eng Met & Chem Eng 13:413-18 E '15  
 Developing an acid reacting alloy, E. W. Parr, B Iron Tr R 67 991-5 N 15 '15; Same, Metal Ind n 13 451 S N '15; Abstract, Am Soc M E J 37:650 7 N '15  
 Die casting of white alloys, J. C. Work, Rel Alloys 12 26 D 30 '14  
 Formulas for specific gravities, etc., of alloys, W. L. Tryon, Foundry 43 224 Jo '15  
 Industrial uses of metallic alloys, W. C. Carroll, Metal Work 81 20 Jl 16 '15  
 Many carbon free metals and alloys now available, B. D. Browne, Eng N 71 636 7 H 20 '15  
 Need of standard railroad car bearing alloy, R. L. Clarke, Foundry 43 451 S N '15  
 New alloys of light metals, C. C. Mosher, Metal Ind n 13 433 4 O '15  
 New die casting metal; Ampen bronze, Met & Chem Eng 13 931 D 1 '15  
 Philosophy and properties of alloys, R. L. Clarke, Foundry 42 491 S 14 '14  
 Rapid analysis of alloys for tin, antimony and arsenic, F. A. Miller, dings J Ind & Eng Chem 7:211-12 Mr '15  
 Recent progress with alloys theory explaining self hardening metals including the special steels, L. Guillet, Automobile 31:1118-20 D 17 '14  
 Specifications for alloys for high speed superheated steam turbine blades, W. H. Parker, B Engineer 120:411-3 N 5 '15

**Alloys—Continued**

Strength of metals vs. composition. E. A. Lewis. Metal Ind n s 13:201-2 My '15

*See also* Aluminum alloys; Amalgams; Babbitt metal; Brass; Britannia; Bronze; Copper alloys; Iron alloys; Metallography; Metallurgy; Monel metal; Solder and soldering; Steel alloys

**Patents**

Court of appeals decision in nickel-chromium resistor suit. Met & Chem Eng 13:414-15 JI '15

**Almshouses**

Cook county infirmary at Oak Forest, Ill. C. A. Erikson. Il plans Brickb 24:277-82, pl 161-5 N '15

**Alphabet**

Cuneiforms. W. Rice. Inland Ptr 54:367-8 D '14

Egyptian alphabet. W. Rice. Inland Ptr 53:886-8 S '14

How we got our alphabet: Aramean, alphabet of religions. W. Rice. Inland Ptr 54:508-9 Ja '15

How we got our alphabet: earlier English and Irish alphabets. W. Rice. Inland Ptr 55:83-4 Ap '15

How we got our alphabet: Greek alphabets. W. Rice. Inland Ptr 54:689-90 F '15

How we got our alphabet: the alphabetic discoveries. W. Rice. Inland Ptr 55:531-2 JI '15

How we got our alphabet: the English alphabets. W. Rice. Inland Ptr 55:234-5 My '15

How we got our alphabet: the Latin alphabet. W. Rice. Inland Ptr 54:823-4 Mr '15

*See also* Cuneiform writing; Printing

**Alton, Illinois****Sewerage**

Design, construction and cost of new sanitary sewerage system at Alton, Ill. J. H. Schwaab. Eng & Contr 43:129-30 F '10 '15

**Alumina**

Alumina in steel. C. F. Comstock. Il Met & Chem Eng 13:891-5 D '15

Phosphate method for alumina. F. G. Hawley. Eng & Min J 99:536-7 Mr '15

**Aluminates**

Constitution of aluminates. R. G. Mahin. Am Chem Soc J 36:2381-3 N '14

Constitution of aluminates. W. Blum. Am Chem Soc J 36:2383-4 N '14

Hydration of Portland cement. A. A. Klein and A. J. Phillips. pls U S Bur Stand Tech 14:433-71 '14

**Aluminum**

Aluminum as a check to sulphide segregation in steel ingots. Iron Age 96:130 JI '15

Aluminum business in 1914. Eng & Min J 99:80 Ja '15

Aluminum in the gas industry. J Ind & Eng Chem 7:255-6 Mr '15

Aluminum: its origin and susceptibility. J. Scott. Il Metal Ind n s 13:105-6 Mr '15

Aluminum most abundant metal. Metal Work 84:493 O '15 '15

Aluminum nitride. diag Met & Chem Eng 13:504 Ag '15

Aluminum or iron crank cases: a comparison of the two materials on the bases of weight, strength and cost. V. I. Moncrieff. Horseless Age 35:582-3 Ap '15

Aluminum precipitation at Nipissing. E. M. Hamilton. Eng & Min J 99:568-71 Mr '15

Aluminum solder. Mace R & W Mace'n 67:670-1 O '15 '15

American institute of metals meeting at Atlantic City, Sept. 28. Iron Age 96:820-2 O '15

Analyzing heat flow: use of aluminum for automobile motor construction. T. H. Sherbondy. Automobile 33:834-5 N '15

Autogenous soldering or welding of aluminum. Il Mach 21:369-71 Ja '15

Cutting aluminum rapidly on a buzz planer. J Fr Inst 180:634 N '15

Manufacture of aluminum in the United States; electrometallurgical industries as possible consumers of electric power. D. A. Lyon and R. M. Keeney. J Fr Inst 180:479 O '15

Melting aluminum chips. H. W. Gillett. Metal Ind n s 13:417-18 O '15; Same. Foundry 42:462-3 N '15; Same. Iron Tr R 57:942-3 N '15

Methods of jointing aluminum. Il Mach 21:470-8 F '15

Nickel-plating on aluminum. Sci Am S 80:197 S 25 '15

Recent developments in aluminum. E. V. Fannell. Il Metal Ind n s 13:453-5 N '15

Satin finish on aluminum. Foundry 42:500 D '14

Small aluminum tubes. J. P. Sheehy. Il diag Metal Ind n s 13:55-6 F '15

Soldering and brazing aluminum. Mach 21:286-8 D '14

Successful acetylene aluminum welding. Metal Work 84:178-4 Ag '15

Use of aluminum in war. N. Flamel. Sci Am S 80:308 S 25 '15

Working aluminum at 400 degrees fahrenheit. Il Horseless Age 36:373 O '15 '15

**Aluminum alloys**

Adoption of aluminum pistons. W. M. Levett. Automobile 33:421-4 S 2 '15

Aluminum alloy piston. J. E. Diamond. Il diag Automobile 33:551-2 S 23 '15

Aluminum alloys as surface protection for metals subject to high temperatures. Eng N 72:1123 D 3 '14

Aluminum in automobile chassis. A. L. Clayden; J. E. Diamond. Automobile 33:330-1 Ag 19 '15

Aluminum-nickel. J. Canac and E. Tassilly. Eng M 49:273-4 My '15

Aluminum piston will never prove success in truly high-duty motor. R. H. Porter. Automobile 33:420-1 S 2 '15

Aluminum versus steel in motor construction. J. E. Diamond. Automobile 33:508-9 S 16 '15

Binary alloys of aluminum; abstract. H. Schirmer. Am Soc M 10 J 37:721 D '15

Exposure tests of light aluminum alloys. Wilson. Mace R & W Mace'n 67:674 O 9 '15

How scientific design and use of aluminum alloys will cheapen motoring. A. L. Clayden. Il diag Automobile 33:226-30 Ag 5 '15

How titanium-aluminum bronze is produced. C. Vickers. Il Foundry 43:273-8 JI '15

Manufacture and use of aluminum-vanadium; abstract. W. W. Clark. Am Soc M 10 J 37:656 N '15

Piston practice; present day design with special reference to aluminum alloy. J. E. Diamond. Il diag Automobile 33:871-7 N 11 '15; Discussion. 33:921-4 N 18 '15

Possible troubles with aluminum motor. A. L. Clayden and others. Il Automobile 33:276-7 Ag 12 '15

Properties of aluminum bronze alloys. W. M. Corse. Il Foundry 43:459-60 N '15

Titanium aluminum bronze. W. M. Corse and C. Vickers. Metal Ind n s 13:190-1 My '15

Titanium-aluminum bronze castings. W. M. Corse. Met & Chem Eng 13:511-13 Ag '15

*See also* Calorizing; Magnallum

**Aluminum chloride**

Action of aluminum chloride on the aliphatic ethers. G. B. Frankforter and E. A. Tunkle. Am Chem Soc J 37:2569-7 N '15

Improvement of high boiling petroleum oils, and the manufacture of gasoline as a by-product therefrom, by the action of aluminum chloride. A. M. McAfee. J Ind & Eng Chem 7:737-41 S '15; Same. Met & Chem Eng 13:593-7 S 15 '15; Same abr. Am Gas Light J 103:203-5-4 N 8 '15

**Aluminum founding**

Aluminum aeroplane motor casting. Il Automobile 33:371 Ag 26 '15

Aluminum die casting a commercial achievement. C. Pack. Metal Ind n s 13:412-13 O '15; Same. Foundry 43:456-7 N '15; Same. Iron Tr R 57:1036 J. N 25 '15; Same cond. Iron Age 96:820 O 7 '15

Aluminum die castings. A. B. Norton. Metal Ind n s 12:503-4 D '14

Difficulties with aluminum match-plates. Foundry 43:113-14 Mr '15

How to make automobile engine castings. Il Foundry 43:201-4 Ag '15

Making aluminum automobile bodies. Il Iron Age 95:1913-16 Ja 3 '15



- Aluminum hydroxide**  
Effect of ammonium chloride upon ferric and aluminum hydroxides during ignition. H. W. Daudt. *J Ind & Eng Chem* 7:847-8 (1915)
- Aluminum iodide**  
Amorphous aluminum iodides. H. C. Franklin. *Am Chem Soc J* 37:847-52 Ap '15
- Aluminum metallurgy**  
Electro-metallurgical industries as possible consumers of electric power. D. A. Lyon and R. M. Keeney. *Am Inst Min & Bul* 104: 1719-24 Ag '15  
Hall processes of aluminum production. *Eng N* 73:177-8 Ja 28 '15  
Smelting of metals in the electric furnace. D. A. Lyon and R. M. Keeney. *U S Bur Mines Bul* 77:73-81 '14
- Aluminum pistons.** See **Pistons**
- Aluminum sulphate**  
Columbus waterworks makes its own aluminum: a revolutionary step in water purification practice. C. P. Hoover. *II plan Eng Rec* 71: 576-7 My 8 '15; Same. *Eng & Contr* 43:418-9 My 19 '15
- Aluminum trioxide**  
Comparison of the relative drying powers of sulfuric acid, calcium chloride and aluminum trioxide when used in ordinary Scholbler desiccating jars. J. W. Marden and V. Elliott. *J Ind & Eng Chem* 7:320-1 Ap '15
- Alunite**  
Alunite and pyrophyllite in trisale and Jurassic volcanics at Kynuot Sound, British Columbia. G. H. Clapp. *Geon Geol* 10:70-88 Ja '15
- Amalgamation**  
Amalgamation tests. W. J. Sharwood. *Am Inst Min & Bul* 104:1659-70 Ag '15; Excerpta. *Met & Chem Eng* 13:327 (1915)  
See also **Alloys**; **Amalgams**; **Mercury**
- Amalgams**  
Effect upon their solution tensions of dissolving the alkali and alkali earth metals in mercury, and the constitution of such solutions. G. M. Smith. *Am Chem Soc J* 37:76-80 Ja '15  
Relative efficiency of various amalgams in the recovery of gold. F. A. Thomson and L. Koffer. *Met & Chem Eng* 13:367-70 Je '15  
Vapor pressure of thallium amalgams. J. H. Hildebrand and E. D. Eastman. *Am Chem Soc J* 37:2462-9 N '15  
Vapor pressures of silver, gold and thallium amalgams. E. D. Eastman and J. H. Hildebrand. *Trans Am Chem Soc* 37:3020-30 (1915)
- Amazon stone**  
Occurrence of amazon stone at North White Plains, N. Y. F. F. Burr. *II Sch Mines Q* 30:180-8 Ja '15
- Ambach**  
Lightest known wool. *Sel Am S* 79:96 F 6 '15
- Ambulance trains.** See **Hospital trains**
- Ambulances**  
Ambulance corps dispatched to front. *II digms Automobile* 31:1166 N 19 '14  
American ambulances in the field. *II Automobile* 32:266-9 F 11 '15  
British give cars for ambulance work. *II Automobile* 33:323 Ag 19 '15  
War uses of the motorcycle; cycle ambulance and motor machine gun. *II Sel Am* 112:138 f F 6 '15
- American academy in Rome**  
Description of building, educational policy, etc. G. G. La Forge. *II Am Inst Arch J* 3:52-72 F '15
- American association of engineers**  
Organization. *Power* 42:459-60 N 28 '15  
Time at hand when the engineering society should awake to its delinquency. H. McCullough; abstracts. *Eng Rec* 72:421-2 (1915); *Power* 42:630-1 (1915)
- American association of passenger traffic officers**  
Special meeting. French Lick, Ind., Oct. 26. *Ry Age* 69:854-5 N 5 '15
- American association of public accountants**  
Advantages of society and association affiliations. J. D. Joplin. *J Account* 19:323-33 My '15
- American association of railroad superintendents**  
28th annual convention, San Francisco, Aug. 19-20. *Ry Age* 69:379-82 Ag 27 '15
- American association of state highway officials**  
New association of state highway officials. *Eng Rec* 70:sup236, 19 '14  
Organization. Washington, D. C., Dec. 12. *Good Roads* n 9:338 Ja 2 '15
- American boiler manufacturers' association**  
27th annual convention, Erie, Pa., June 22. *Iron Tr R* 56:1301 Je 21 '15
- American chemical society**  
50th meeting, New Orleans, March 31-April 3. *J Ind & Eng Chem* 7:370-9 My '15  
50th meeting, New Orleans, March 31-April 3. *Met & Chem Eng* 13:380-8 My '15  
50th meeting; program of papers and reports of committees. *J Ind & Eng Chem* 7:411-3 My '15  
51st meeting, Seattle, Wash., Aug. 31-Sept. 3. *Met & Chem Eng* 13:387-9 S 15 '15  
51st meeting, Seattle, Wash., Aug. 31-Sept. 3; program of papers. *J Ind & Eng Chem* 7: 830-1 (1915)
- American civic association**  
10th annual convention, Washington, D. C. *Munic J* 37:967 D 31 '14
- American concrete institute**  
Edison fire decreased at Concrete Institute, Chicago, Feb. 9-12. *Eng Rec* 71:248 F 20 '15  
11th annual convention, Chicago, Feb. 9-12. *Concrete Con* 6:113-23 Mr '15  
11th annual convention, Chicago, Feb. 9-12. *Eng N* 73:330-1 F 18 '15
- American concrete pipe association**  
Annual convention, Chicago, Feb. 15-16, 1915. *Concrete Con* 6:111 Mr '15
- American cotton manufacturers' association**  
Meeting at Memphis Textile World 19 176 07 My '15
- American electric railway association**  
Annual convention, San Francisco, 1915; abstract of paper, reports and discussions. *Elec Ry J* 46:301-60 O 9 '15  
Annual convention, San Francisco, Oct. 4-8. *Elec W* 66:290 O 9 '15  
Annual convention, San Francisco, Oct. 4-8; program. *Elec Ry J* 46:262 F 29 '15  
Chicago Elevated cotton panned. *Elec Ry J* 46:190 Ap 21 '15  
Code of principles. *Elec Ry J* 41:992, 1040 O 31, N 7 '14  
Code of principles. *Ry R* 54:263 D 26 '14  
Code of principles. G. T. Crosby. *Elec Ry J* 45:370-3 F 20 '15  
Code of principles. T. B. Williams. *Elec Ry J* 45:270-2, Discussion G. E. Tripp; M. G. Hatch. *Elec Ry J* 46:301-60 O 9 '15  
Defining the well, objection to the Code of principles by the "New republic." *Elec Ry J* 44:1330 D 5 '14  
7th annual mid year meeting. *Elec Ry J* 46: 211-19 Ja 30 '15
- American electrochemical society**  
American electrochemical society in its external relations. E. A. Laddury. *Met & Chem Eng* 13:377-9 My '15  
27th general meeting, Atlantic City, April 22-23. *Elec R & W* 130:68-71 My 1 '15  
27th general meeting, Atlantic City, April 22-23. *Elec W* 65:100-10 My 1 '15  
27th general meeting, Atlantic City, April 22-23. *Met & Chem Eng* 13:311-29 My '15  
28th general meeting, San Francisco, Sept. 16-17. *Elec R & W* 130:67-68 N 2 '15
- American electroplaters' society**  
Outlook for the future effect of the society on Canadian metal industries. W. B. Burrows. *Metal Ind* n 13:320 N 10 '15  
3d annual convention, Dayton, O., June 2-6. G. H. Proctor. *Metal Ind* n 13:323-4 Je '15  
3d annual meeting, Dayton, O., June 2-6. *Foundry* 43:284 Ji '15

- American federation of arts**  
6th annual convention. *Am Inst Arch J* 3:241-3 Je '15
- American forestry association**  
Forest relations between the East and the West as the East hopes to see them. H: S. Drinker. *Am For* 21:1054-6 N '15
- American foundrymen's association**  
Annual convention, Atlantic City. *Foundry* 43: 385-94 O '15  
Annual convention, Atlantic City. *Iron Tr R* 57:694-701 O 7 '15  
Annual meeting at Atlantic City; programs. *Foundry* 43:333-41 S '15  
Convention held at Atlantic City, Sept. 27-Oct. 1; abstract of papers and discussion. *Iron Age* 96:814-19, 822-4 O 7 '15
- American gas institute**  
Address. E. C. Jones. *Am Gas Light J* 103:213 O 4 '15  
Constitution and by-laws. *Am Gas Inst Pro* 9: pt 1, 40-62 '14  
List of members of the American gas institute. *Am Gas Inst Pro* 9:pt 2,1815-1926 '14
- American good roads congress.** See **American road builders' association**
- American institute of architects**  
First award of the collaborative prize of the A. I. A. to the students of the American academy in Rome. *Il Am Inst Arch J* 3:344-5 Ag '15  
48th annual convention; summarized report of the proceedings. *Am Inst Arch J* 2:579-90 D '14  
Personal reminiscences of Charles Follen McKim. G. Brown. *Arch Rec* 38:576-82 N '15
- American institute of chemical engineers**  
Los Angeles meeting, Aug. 16-18. *Met & Chem Eng* 13:530 S 1 '15  
7th annual meeting, Philadelphia, Dec. 2-5, 1914. *Eng & Min J* 98:1033 D 12 '14  
7th annual meeting, Philadelphia, Dec. 2-5, 1914. *J Ind & Chem Eng* 7:64-9 Ja '15  
7th annual meeting, Philadelphia, Dec. 2-5, 1914. *Met & Chem Eng* 13:41-2 Ja '15  
7th semi-annual meeting, San Francisco, Aug. 26-28. *Met & Chem Eng* 13:603-17 S 15 '15
- American institute of electrical engineers**  
History of the Schemata section of the A. I. E. E. S. M. Crego. *Gen Elec R* 18: 1006-7 O '15  
Midwinter convention; abstracts of papers. *Elec W* 65:533-8 F 27 '15  
Midwinter convention, New York city, February 17-19, 1915. *Elec R & W Elec'n* 66: 389-96 F 27 '15  
Panama-Pacific convention, San Francisco, Sept. 16-18. *Elec R & W Elec'n* 67:567-73 S 25 '15  
Panama-Pacific convention, San Francisco, Sept. 16-18. *Elec W* 66:677-9 S 25 '15  
32d annual convention, Deer Park, Md., June 20-July 2. *Eng N* 74:90-1 J 18 '15  
32d annual convention, Deer Park, Md., June 20-July 2; abstracts of papers and discussions. *Elec R & W Elec'n* 67:69-75 J 10 '15  
32d annual convention, Deer Park, Md., June 20-July 2; abstracts of papers and discussions. *Elec W* 66:6-11, 62-7 J 1 3-10 '15  
306th meeting, Cleveland, Ohio, March 18-19. *Elec R & W Elec'n* 66:595-8 Mr 27 '15  
314th meeting, St. Louis, Oct. 19-20. *Elec R & W Elec'n* 67:806-8 O 30 '15
- Industrial power committee**  
Industrial power committee. D: B. Rushmore. *Am Inst E M Pro* 34:711-14 My '15
- American institute of metals**  
Annual convention, Atlantic City, Sept. 28-30. *Iron Tr R* 57:702-4 O 7 '15  
Annual meeting, Atlantic City, Sept. 28-30. *Foundry* 43:394-7 O '15  
Annual meeting, Atlantic City, Sept. 28. *Iron Age* 96:819-22 O 7 '15  
Annual meeting, Atlantic City, Sept. 28-30. *Met & Chem Eng* 13:712 O 15 '15  
Annual meeting, Atlantic City, Sept. 29. *Eng & Min J* 100:597 O 9 '15  
Annual meeting of foundrymen and exhibition of foundry supplies and apparatus held at Atlantic City, Sept. 25-Oct. 1. *Il Metal Ind n* 13:401-6 O '15
- American institute of mining engineers**  
A. I. M. E. considering changes. *Eng & Min J* 98:1057-8 D 12 '14  
Annual New York meeting, Feb. 15-17. *Eng & Min J* 99:377-8 F 20 '15  
May the Institute endorse opinions? R. W. Raymond. *Eng & Min J* 99:205-6 Ja 23 '15  
Officers, members, rules, etc. *Am Inst Min E* Bul 101:suppl-190 My '15  
110th meeting, New York city, Feb. 15-17. *Met & Chem Eng* 13:177-85 Mr '15  
Pittsburg meeting. *Colliery* 35:245-6 D '14  
Shall the A. I. M. E. be able to express itself? Opposition's case by R. W. Raymond; Affirmative view by J. F. Kemp. *Eng & Min J* 98:1054-6 D 12 '14
- American international corporation**  
Big financial concern to aid foreign trade. *Ry R* 57:705 N 27 '15  
Organize to promote foreign trade. *Elec W* 66:1180-1 N 27 '15
- American iron and steel institute**  
Cleveland meeting, 1915. *Iron Tr R* 57:846-8 O 28 '15  
Cleveland meeting, 1915; papers. *Iron Age* 96: 984-1005, 1025-8 O 28 '15  
8th general meeting, New York city, May 28. *Iron Age* 95:1243-6+ Ja 3 '15  
9th general meeting, Cleveland, Oct. 22-23. *Met & Chem Eng* 13:830-1 N 15 '15  
Spring meeting, New York city, May 28. *Iron Tr R* 56:1117-18 Ja 3 '15
- American mining congress**  
17th annual meeting. *W Soc M J* 19:1016-18 D '14
- American museum of natural history**  
Two groups in the American museum of natural history. J. W. Griggs. *Il Sci Am* 112: 345 Ap 10 '15
- American museum of safety**  
New York Central awarded Harriman safety medal. *Ry Age* 58:271-2 F 12 '15
- American public health association**  
42d annual convention, Jacksonville, Fla., Nov. 30 to Dec. 4, 1914. *Munic J* 37:902-3 D 17 '14  
43d annual meeting, Rochester, N. Y., Sept. 6-13. *Munic J* 39:483-4+ S 23 '15  
Sanitary engineering section discusses refuse disposal, sewerage, water supply and methods of analysis. *Eng Rec* 70:sup385-6 D 12 '14
- American railway association**  
Fall meeting, Chicago, Nov. 18, 1914. *I. C. Frith.* *Ry Age* 57:1113 D 18 '14  
Fall session, Chicago, Nov. 17, 1915. *Ry R* 57:648-9 N 20 '15
- American railway bridge and building association**  
25th annual convention, Detroit, Mich., Oct. 10-21. *Eng N* 74:858-9 O 28 '15  
25th annual convention, Detroit, Mich., Oct. 10-21. *Ry Age* 59:753-64 O 22 '15  
25th annual convention, Detroit, Mich., Oct. 10-21. *Ry R* 57:516-19 O 23 '15
- American railway engineering association**  
Assigned work of railway engineering association. *Eng Rec* 71:526-7 Ap 24 '15  
Committee reports on electricity, ties, wood preservation, fences. *Elec Ry J* 45:570-1 Mr 20 '15  
Committees; complete list of names of members appointed and subjects specified for investigation and report. *Ry Age* 58:853-5 Ap 16 '15  
President's address. W. B. Storey. *Ry R* 56: 385-6 Mr 20 '15  
16th annual convention, Chicago, March 16-18. *Eng Rec* 71:411-12 Mr 27 '15  
16th annual convention; committee reports. *Ry R* 56:386-403 Mr 20 '15  
16th annual meeting, Chicago, March 16-18. *Eng N* 73:598-9 Mr 25 '15  
Year's work reviewed. *Eng Rec* 71:374-7 Mr 20 '15
- American railway master mechanics' association**  
Committees. *Ry R* 57:522-3 O 23 '15  
48th annual convention, Atlantic City, June 9-11. *Elec Ry J* 45:1115-17 Ja 12 '15  
48th annual convention, Atlantic City, June 9-11. *Ry R* 56:806-9, 847-53 Ja 12-19 '15

**American railway perishable freight association**  
Semi-annual meeting, Chicago, Sept. 8. Ry  
Age 59:513 S 17 '15

**American railway tool foremen's association**  
7th annual convention, Chicago, July 19-21.  
Ry Age 59:193-4 J 30 '15  
7th annual convention, Chicago, July 19-21.  
Ry Age (Mech ed) 80:409-16 Ag '15  
7th annual convention, Chicago, July 19-21.  
Ry R 57:115-17 J 24 '15

**American road builders' association**  
Abstracts of papers at the 11th annual con-  
vention held at Chicago, Dec. 14-18, 1914.  
Eng Rec 70:363-5 D 19 '14

5th American Good roads congress and 11th  
annual convention of the American road  
builders' association at Chicago, Dec. 14-18,  
1914. Good Roads n s 9:3-29, 53-75, 96-106  
Ja 2, P 6, Mr 6 '15

5th Good roads congress of the American road  
builders' association, 1914. Eng N 72:1277-8  
D 24 '14

11th annual convention, Chicago, Dec. 14 to  
18. Eng Rec 70:sup305-6 D 26 '14

11th annual convention, Chicago, Ill., Dec. 14-  
18. Good Roads n s 8:335-9, 247-8, 249-50;  
9:1-2 D 5, 19-26 '14, Ja 2 '15

11th annual convention, Chicago, Ill., Dec.  
15, 1914. Muncie J 37:533-6 D 24 '14  
Report of committee on standards. Good Roads  
n s 9:233-9 Jo 5 '15

**American road congress, Fourth**  
Meeting at Atlanta, Nov. 9-13. Concrete Cem  
5:266-7 D '14  
Road congress at Atlanta. Good Roads n s 8:  
217-20 D 5 '14

**American smelting & refining co.**  
Abstract of the annual report for 1914. Eng  
& Min J 95:582-3 Mr 27 '15  
Securities. Eng & Min J 100:304 Ag 28 '15

**American society for testing materials**  
18th annual meeting, Atlantic City, N. J.,  
June 22-26. Iron Age 95:1105 Jo 21 '15; Con-  
crete Cem 7:13-1 J 1 '15; Eng N 74:36-41, 67-9  
J 1-8 '15; Eng Rec 72:228-9 J 3 '15; Power  
42:33-6 J 6 '15; Ry Age 59:81-8 J 9 '15  
Fifty-three standards considered. Iron Tr R  
57:37-48 J 1 '15  
Testing society still grows. Iron Tr R 56:  
1300 Jo 24 '15

**American society of civil engineers**  
American society of civil engineers on eve of  
important action. Eng Rec 71:574-5 My 8 '15  
Needs of the society. Eng Rec 71:67 Ja 16 '15  
Rules for special technical committees. Eng  
Rec 71:121-2 Ja 23 '15  
62d annual meeting, New York, Jan. 20, 1915.  
Eng N 73:185-7 Ja 28 '15  
62d annual meeting, New York, Jan. 20, 1915.  
Eng Rec 71:122 Ja 23 '15

**American society of heating and ventilating  
engineers**  
Constitution and by-laws. Am Soc Heat &  
V 19 20:443-58 '14  
Our society, its aims and opportunities; with  
discussion. J. J. Blackmore, Am Soc Heat  
& V 19 20:392-404 '14  
Semi-annual meeting, Atlantic City, Sept. 16-  
17. Dom Eng 72:379-80 S 25 '15  
Semi-annual meeting, Atlantic City, Sept. 16-  
17. Heat & Ven 12:33-9 () '15  
Semi-annual meeting, Atlantic City, Sept.  
16-17. Metal Work 81:414-17 S 24 '15  
21st annual meeting, January 19-22, 1915.  
Heat & Ven 12:39-48 P '15  
21st annual meeting, New York city, January  
19, 1915. Metal Work 82:203-74 Ja 30 '15  
21st annual meeting, New York city, Jan. 19-  
22. Dom Eng 70:144-7 Ja 30 '15  
21st annual meeting, New York, Jan. 19-22,  
1915. Power 41:175-8 F 2 '15

**American society of marine draftsmen**  
4th annual convention, New York, April 16-  
17. Int Marine Eng 20:211 My '15  
Object of the society and its success. Int  
Marine Eng 20:193 My '15

**American society of mechanical engineers**  
Annual meeting in New York, Dec. 1-4, 1914.  
Elec Ry J 44:1248-50 D 5 '14

Fall meeting, New York, Dec. 1-4, 1914. Iron  
Tr R 55:1093-7 D 10 '14

Mechanical engineers meet at San Francisco.  
Power 42:466-1 S 28 '15  
Reports of standing committees. Am Soc M E  
J 37:ix-xvi D '15  
San Francisco meeting, Sept. 16-17. Iron Age  
96:716-7 S 30 '15  
Spring meeting. II Am Soc M E J 37:v-xiii  
My '15  
Spring meeting, Buffalo, June 22-25. Iron Tr  
R 57:49-50 J 1 '15  
35th annual meeting, Dec. 1-4, 1914. Am Soc  
M E J 37:1-6 Ja '15  
35th annual meeting, New York city, 1914. Eng  
N 72:1188-9 D 10 '14  
35th annual meeting, New York, Dec. 1-4.  
Power 40:363-6 D 15 '14

**American society of municipal improvements**  
Convention, Dayton, O. Eng N 74:810-12 () 21  
'15  
Dayton convention, Oct. 12-15. Muncie Eng 49:  
189-90 N '15  
22d annual convention, Dayton, O., Oct. 12-15.  
Muncie J 39:629-32 () 21 '15  
Twenty-one years of growth and activity.  
Muncie J 39:535-9 () 7 '15  
Work of society committees. Muncie J 39:619-  
20 () 21 '15

**American society of refrigerating engineers**  
10th annual meeting, New York, Nov. 30 and  
Dec. 1. Power 40:866-7 D 15 '14

**American society of sanitary engineering**  
10th annual meeting, San Francisco, August  
9-11. Dom Eng 72:262-3 Ag 28 '15  
10th annual meeting, San Francisco, August  
9-11. Metal Work 81:318-20 S 3 '15

**American supply and machinery manufacturers' association**  
Annual convention, Philadelphia, June 3-1.  
Iron Age 95:1290-3 Jo 10 '15

**American telephone & telegraph co.**  
Annual report. Elec N 66:753-4 Mr 20 '15  
Annual report for the year ended December  
31, 1914. Elec R & W Elec'n 66:532-3 Mr  
20 '15

**American uniform boiler law society**  
Promulgation of the boiler code. Am Soc M E  
J 37:ix-xx D '15

**American water works association**  
Constitution and list of members. Am Water  
Works Assn J Sup 1:1 91 '14  
Constitution and list of members, June, 1915.  
Am Water Works Assn J Sup 2:1 104 Jo '15  
35th annual convention, Cincinnati. Eng Rec  
71:663-6 My 22 '15  
35th annual convention, Cincinnati, May 10-  
14. Am Water Works Assn J 2:339-317 Jo  
'15  
35th annual convention, Cincinnati, May 10-  
14. Eng N 73:1600-1 My 20 '15  
35th annual convention, Cincinnati, May 10-  
14. Muncie J 38:705-8 My 20 '15  
Water works cooperation. C. C. Smith. Eng  
N 73:999-1000 My 20 '15

**American wood preservers' association**  
Abstracts of papers presented at the 11th  
annual convention, Chicago, Jan. 19-21. Eng  
Rec 71:105-8, 144-5 Ja 23 '15

11th annual convention, Chicago, Jan. 19-21.  
Elec Ry J 45:181-2 Ja 23 '15  
11th annual convention, Chicago, Jan. 19-21,  
1915. Eng N 73:182-3 Ja 28 '15  
11th annual convention, Chicago, Jan. 19-21,  
1915. Ry R 65:115-17 Ja 23 '15  
11th annual convention, Chicago, Jan. 19-21,  
1915. Abstracts of papers and discussions.  
Ry Age 65:115-63 Ja 23 '15

Modifications made in committees' recom-  
mendations. Elec Ry J 45:227 Ja 20 '15

Wood preservers open tanks to young men. Eng  
Rec 71:155-6 Ja 30 '15

**Amides**  
Periods of acid amides and their addition  
products with metallic salts; substances of  
exceptionally high molecular weight. F. J.  
Moore and L. M. Thomas. Am Chem Soc J  
36:1923-37 M '14

Reactions in liquid ammonia. E. C. Franklin.  
Am Chem Soc J 27:2279-95 () '15

**Amino acids**

Quantitative determination of the amino acids of feeding-stuffs by the Van Slyke method. H. S. Grindley, W. E. Joseph and M. E. Slater. *Am Chem Soc J* 37:1778-81 J1 '15

**Amino nitrogen**

Total amino nitrogen in the seedlings of the Alaska pea. T. G. Thompson. *Am Chem Soc J* 37:230-5 Ja '15

**Ammeters**

Meaning of alternating-current ammeter readings. W. S. Franklin. *diags Elec W* 64:1112 D 5 '14

Proper use of ammeter and voltmeter in the plating room. *Metal Ind n s* 13:87-8 F '15

Voltmeter and ammeter in the plating room. S. E. Huenerfauth. *Metal Ind n s* 13:71 F '15  
*See also* Ampere-hour meters

**Ammonia**

Ammonia a heat vehicle. A. Johnson. *Power* 41:727 My 25 '15; Same. *Sci Am S* 80:55 J1 24 '15

Ammonia explosions in refrigerating plants; abstract. G. Cataneo. *Am Soc M E J* 37:344-5 Je '15

British producer-gas and ammonia-recovery plant. *diags Met & Chem Eng* 13:456-8 J1 '15

Carbonization in bulk—Koppers' ovens. C. J. Ramsburg. *II diag Am Gas Inst Pro* 9:pt 1, 594-601 '14

Coal gas residuals—Fold process. V. H. Wagner. *diags Am Gas Inst Pro* 9:pt 1, 340-61 '14; Same cond. *Am Gas Light J* 101:307-9 N 16 '14; Same cond. *Met & Chem Eng* 12:699-702 N '14; Same cond. *Sci Am S* 80:318-19 N 13 '15; Discussion. *Am Gas Inst Pro* 9:pt 1, 361-7 '14

Decomposition of ammonia and the chances of explosions. F. L. Fairbanks. *Power* 42:715-17 N 23 '15

Determination of ammonia in soils. R. S. Potter and R. S. Snyder. *II J Ind & Eng Chem* 7:221-6 Mr '15

Explosion of ammonia vapor. *Am Gas Light J* 102:91 F 8 '15

Extracting ammonia. *diag Am Gas Light J* 103:148 S 6 '15

Initial charge with anhydrous. H. G. Gibson. *Power* 42:681 N 16 '15

New apparatus for the manufacture of aqua ammonia from raw gas liquor. R. W. Hillebrand. *II diag Am Gas Light J* 103:241-3 O 18 '15

Precipitant for ammonia. S. S. Graves. *Am Chem Soc J* 37:1171-81 My '15

Reactions in liquid ammonia. E. C. Franklin. *Am Chem Soc J* 37:2279-95 O '15

Vapor pressures of acetylene, ammonia and isobutane at temperatures below their normal boiling points. G. A. Burrell and I. W. Robertson. *Am Chem Soc J* 37:2482-6 N '15

**Ammonia compressors**

Ammonia compressor alarm. G. A. Robertson. *Power* 41:815 Je 15 '15

Ammonia diagrams. *Power* 40:930; 41:204 D 29 '14, 9 '15

Effect of superheated ammonia on compressor capacity. H. R. Howell. *Power* 42:646-7 N 9 '15

Equipment and methods in largest refrigeration system. C. H. Bromley. *Power* 40:843-4, 878-83 D 15-23 '14

Gaskets for plugs of compressor valves. A. G. Solomon. *Power* 41:81 Ja 12 '15

Incorrect diagrams from compressor. F. V. Larkin. *Power* 41:415 Mr 23 '15

Massachusetts ammonia safety regulations. F. L. Fairbanks. *diags Power* 42:753-6 N 30 '15

Overhauling the ammonia compressor. F. B. Matthews. *Power* 42:479-81 O 5 '15

Power requirements of ammonia compressors. W. N. McKee. *Power* 41:158-60 F 2 '15

**Ammonia condensers**

Cleaning ammonia condensers. A. G. Solomon. *Power* 42:761-2 N 30 '15

Purging ammonia condensers. C. O. Sandstrom. *Power* 42:311-12 Ag 31 '15

Purging ammonia condensers. G. A. Robertson. *diag Power* 42:15 J1 6 '15

Removing scale from ammonia condensers. A. G. Solomon. *Power* 42:34-5 J1 20 '15

**Ammonium chloride**

Effect of ammonium chloride upon ferric and aluminum hydroxides during ignition. H. W. Daudt. *J Ind & Eng Chem* 7:847-8 O '15

Mixed crystals of ammonium chloride with manganese chloride. H. W. Foote and B. Saxton. *Am Chem Soc J* 36:1695-1704 Ag '14

**Ammonium citrate**

Tri-ammonium citrate. R. A. Hall. *Am Chem Soc J* 37:208-16 Ja '15

**Ammonium halides**

Densities and degrees of dissociation of the saturated vapors of the ammonium halides, and the related thermal data. A. Smith and R. H. Lombard. *Am Chem Soc J* 37:38-70 Ja '15

**Ammonium hydroxide**

Behavior of ammonium phosphomolybdate with ammonium hydroxide. F. B. Sircar. *Am Chem Soc J* 36:2372-4 N '14

Electrochemical oxidation of hydrazine sulfate and ammonium hydroxide. J. W. Turrentine and J. M. Olin. *Am Chem Soc J* 37:1114-22 My '15

Use of ammonium hydroxide for the extraction of rosin from wood. H. K. Benson and H. N. Crites. *J Ind & Eng Chem* 7:918-20 N '15

**Ammonium oxalate**

Thorium ammonium oxalate. C. James, C. F. Whittemore and H. C. Holden. *Am Chem Soc J* 36:1853-6 S '14

**Ammonium phosphomolybdate**

Behavior of ammonium phosphomolybdate with ammonium hydroxide. F. B. Sircar. *Am Chem Soc J* 36:2372-4 N '14

**Ammonium salts**

Neutral ammonium salts of some substituted benzoic acids. L. McMaster and I. H. Godlove. *Am Chem Soc J* 37:2181-8 S '15

Study of the preparation and properties of the ammonium salts of organic acids. L. McMaster. *Am Chem Soc J* 36:1916-25 S '14

Valence of nitrogen in ammonium salts. W. A. Noyes and R. S. Potter. *Am Chem Soc J* 37:189-203 Ja '15

**Ammonium sulphate**

Discoloration of sulphate of ammonia. *Am Gas Light J* 102:92-3 F 8 '15

Production of sulphate of ammonia in 1914. *Am Gas Light J* 103:161-4 S 13 '15; Same cond. *Met & Chem Eng* 13:638-9 S 15 '15

Quality of sulfate of ammonia for export. *J Ind & Eng Chem* 7:160 F '15

**Ammunition**

Ammunition and finance in the present war. *Sci Am* 112:604 Je 19 '15

Ammunition components, United States army—principle dimensions and general specifications. *Iron Age* 96:sup358a Ag 12 '15

Cost of munitions of war. *Mach* 21:405 Ja '15

Field artillery and ammunition. G. B. Jewell. *II diags Eng M* 49:698-711 Ag '15

Gun-primers and detonators. *Sci Am S* 80:35 J1 17 '15

Safe transportation of small-arms ammunition. *II Sci Am* 112:589-90 Je 12 '15

*See also* Bullets; Explosives; Military; Gunpowder; Projectiles; Shells; Shrapnel shells

**Amole**

Amole for laundering woolen goods. *Sci Am* 112:49 Ja 9 '15

**Amorphous substances**

Filling system in the chemistry of amorphous substances. W. K. Lewis. *Met & Chem Eng* 13:821 D 1 '15

**Ampere-hour meters**

Ampere-hour meters on the Annapolis short line. *Elec Ry J* 45:728-3 Ap 10 '15

Mercury-type ampere-hour meter. *II Elec W* 66:1164 N 20 '16

Meter results on Chicago & Milwaukee line. *II diag Elec Ry J* 45:973-6 My 22 '15

New ampere-hour meter for electrolytic works and refineries. *II Met & Chem Eng* 13:191 Mr '15

**Amperesand**

Use of the amperesand, or short sand. J. L. Frazier. *Inland Ptr* 54:861-3 F '15

**Amphibia**

Rare amphibians at the New York zoological park. R. L. Ditmars. *Il Sci Am S* 80:196 S 25 '15

**Amphitheaters.** See **Sindia**

**Amylases**

Comparison of certain properties of pancreatic and malt amylase preparations. H. C. Sherman and M. D. Schlesinger. *Am Chem Soc J* 37:1306-19 My '15

Further experiments upon the purification of malt amylase. H. C. Sherman and M. D. Schlesinger. *Am Chem Soc J* 37:643-8 Mr '15

Influence of certain acids and salts upon the activity of malt amylase. H. C. Sherman and A. W. Thomas. *Am Chem Soc J* 37: 633-43 Mr '15

**Anaglyphs**

Anaglyphs. *Sci Am* 113:68 J1 17 '15

**Analoid method**

Analoid method for the determination of manganese in steel, iron ore and slag. *Met & Chem Eng* 12:793-4 D '14

Analoid method for the determination of phosphorus in steel, iron and slag. *Met & Chem Eng* 13:191-2 Mr '15

**Analysis of food.** See **Food—Analysis**

**Anchors**

Foundations for transmission line towers and tower erection; transmission tower steel anchors set in earth. J. R. Loeper. *Il Am Inst E E Pro* 34:1179-86 Jo '15; Abstract. *IEEE W* 66:9-10 J1 3 '15

Torsional strengths of guy anchor rods. T. Croft. *diagr Elec W* 65:1607-9 Jo 19 '15

**Anemometer**

Best way to take anemometer readings; committee report. *Am Soc Heat & V E* 19:207-7 '13

Calibration of anemometers. D. A. Hackett. *Colliery* 36:66-7 S '15

**Anesthetics**

Apparatus for mechanical administration of anesthetics. *Il Sci Am* 113:471 F N 27 '15

Nature our most available and reliable ally. W. H. Hadden. *Sci Am* 113:309 Ap 3 '15

Rate of evaporation of ether from oils and its application in oil-ether colonic anesthesia. C. Haskerville. *J Ind & Eng Chem* 7:868-70 O '15

Twilight sleep in the light of day. *Sci Am S* 79:112 F 13 '15

**Angle-sheave frames**

Design of angle-sheave frames. F. L. Burr. *Eng & Min J* 95:350-64, 403-8 F 20-27 '15

**Angle trisection.** See **Trisection of angles**

**Angles**

Chords of angles from one to ninety degrees. S. L. Cook. *Foundry* 43:416a O '15

**Anhydrite**

Occurrence of anhydrite in the United States. A. P. Rogers. *Il Sch Mines Q* 36:123-42 Ja '15

**Anhydrous hydrazine.** See **Hydrazine**

**Aniline**

Testing aniline oil and salt. L. J. Maton. *diagr Textile World* 46:566-6 Ag '15

**Aniline colors.** See **Coal-tar colors**

**Animal charcoal**

Absorption of glucose by bone-black. H. A. Morton. *Am Chem Soc J* 38:1832-8 N '14

**Animal intelligence**

Recent experiments on vision in animals. H. M. Johnson. *Biblog Illum Eng Soc* 10: 502-14 no 8 '15

Thinking animals. *Sci Am S* 79:119 F 20 '15

Visual pattern-discrimination in the vertebrates; difference-threshold for band-width in the monkey and the domestic chick. H. M. Johnson. *J Ex Inst* 180:238-40 Ag '15

**Animal products**

See also **Eggs**; **Meat**

**Animals, Habits and behavior of**

Study of animal and human behavior. L. K. Nirshberg. *Il Sci Am* 113:491-2 My 29 '15

**Animals, Treatment of**

Animal life in a zoo. A. Pope. *Il Sci Am* 112:385 f Ap 21 '15

**Annapolis short line**

From a.c. to d.c. in the night. *Il diagr Elec Ry J* 46:542-50 Mr 20 '15

**Annealing**

Annealing brass for forming and drawing operations. H. W. Dunbar. *Il Mach* 21:660-1 Mr '15

Annealing car wheels. W. J. Keep. *Foundry* 43:187-8 My '15

Annealing effect on light gray iron castings. G. S. Evans. *Il Foundry* 43:219-21 Jo '15

Annealing gray iron castings. *Il Foundry* 43: 188 My '15

Annealing of brass. P. Johnson. *Il Metal Ind* n s 13:65-7 F '15

Annealing of brass cartridge cases. L. J. Krom. *Il diagr Metal Ind* n s 13:33-9 63 S '15

Annealing oven for brass. W. E. Gurn. *Grimallo, diagr Iron Age* 94:1397 D 12 '14

Cure of chills. *Eng & Contr* 14:230 f S 22 '15

Electric annealing furnaces. *Iron Age* 95:1017 My 6 '15

Importance of annealing steel castings. *Iron Age* 95:178 30 J1 15 '15

Industrial uses of gas. H. M. Thornton. *Il Am Gas Light J* 103 19 J1 12 '15

Recommended practice for the annealing of carbon steel castings. *Foundry* 43:102a Mr '15

Reinforced annealing box. *diagr Iron Tr R* 37: 415 S 2 '15

Researches in annealing malleable castings. O. W. Storey. *Il Foundry* 43:14 S 1 '14

Scale burnt malleable castings. R. Moldenke. *Foundry* 43:252 S 1 '15

See also **Alloys**, **Steel**

**Announcements (printing)**

Announcements and invitations. *Ireland Pir* 55:55a 6a6h Ag '15

**Annuities**

Annuities and bond discount. O. A. Eider. *J Account* 20:293 f S 1 '15

Annuities and bond discount. R. J. Bennett. *J Account* 19:105 24 Jo '15

**Antennas.** See **Wireless telegraph**

**Anthracite coal.** See **Coal**

**Anthraquinone**

Separation of mono-, di-, and tri-sulfonic acids of anthraquinone. M. L. Crossley. *Am Chem Soc J* 37:215 f 1 '15

**Anthropogeography**

Problems of geographic influence. A. P. Brigham. *Sci Am S* 79:35 f, 36:16 f, 19, 20-9 Jo 12, J1 3 17 '15

**Anthropology****Exhibitions**

Man's development illustrated at San Diego; busts depict the earliest known human beings. A. H. Wrold. *Il Sci Am S* 80:557 N 20 '15

**Anthropometry**

Scientist and the athlete, the physiological laboratory of the French military school at Joinville. J. Boyer. *Il Sci Am S* 79:227 My 8 '15

See also **Identification**

**Anti-dumping law.** See **Tariff**; **Tariff—Canada**

**Antimony**

Antimony mining in Bolivia. *Eng & Min J* 100:796 N 13 '15

Antimony production of the world. *Eng & Min J* 100:777-8 Ag 14 '15

Electrolytic antimony refining. A. G. Hetta. *Met & Chem Eng* 13:818 31 N 15 '15

Use of hydrofluoric acid in the separation of copper and lead from tin and antimony by means of the electric current. L. W. McNay. *Am Chem Soc J* 38:2375-81 N '14

See also **Jamomants**

**Antipyrin**

Estimation of caffeine and antipyrin in admixture. W. O. Emery and N. Palkin. *J Ind & Eng Chem* 7:519-21 Jo '15

**Antiseptics**

New surgical antiseptic; hypochlorites. *Sci Am* 113:164 Ag 21 '15

Quinine in the treatment of gaseous gangrene. K. Taylor. *Sci Am* S 80:242-3 O 16 '15

See also Disinfection and disinfectants

**Apartment houses**

Apartment house, 11 East Chase street, Baltimore, Md.; views and plan. *Brickb* 24:pl 120 Ag '15

Apartment house, 405 Park avenue, New York; views and plans. *Brickb* 24:pl 61-3 My '15

Apartment house, North street, Buffalo; views and plans. *Brickb* 24:pl 99-100 JI '15

Competition for a two-apartment house. II plans *Brickb* 24:202-6 Ag '15

Craig apartments, 58th street and Monroe avenue, Chicago, Ill.; view and plans. *Brickb* 24:pl 97-8 JI '15

Four-family house of stucco finish. II plan *Bldg Age* 37:29-30 Ag '15

Popular bungalow-court idea; layout and description of St. Francis court at Pasadena, Cal. C. A. Byers. II diag plans *Bldg Age* 37:19-22 Ap '15

Semi-detached four-family house. II plans *Bldg Age* 37:42-4 JI '15

World's costliest apartments. plan *Bldg Age* 37:64-9 Je '15

See also Duplex houses

**Apex law. See Mining laws****Apple syrup**

Apple syrup and concentrated cider. *Sci Am* S 80:78-9 JI 31 '15

**Appraising. See Valuation****Apprentices**

Apprentice system at the Lynn works of the General electric company. T. Bouda. *Gon Elec R* 18:35-7 Ja '15

Apprentice work in steel plants. B. W. Gilson. *Iron Tr R* 55:1138-4 D 17 '14

Brown & Sharpe apprenticeship system. *Iron Age* 96:440 Ag 19 '15

Does modern apprenticeship pay? I. L. Park. *Ry Age (Mech ed)* 80:248 My '15

Educating about metal workers' apprentices. O. M. Cluss. *Metal Work* 83:827 Je 4 '15

Helping the apprentice. H. M. Blackburn. *Ry Age (Mech ed)* 80:582-3 N '15

How can you help the apprentice? prize letter and others received in competition. *Ry Age (Mech ed)* 80:531-2 O 15

Start the apprentice right. *Ry Age (Mech ed)* 80:585-6 N '15

Training for the industrial side of engineering. A. P. M. Fleming. *Inst J* 19 J 53:566-73; Discussion. 53:574-86 Ap 15 '15

Training the apprentice. H. Hillman. II *Inland Ltr* 55:820-2 S '15

Training the master plumber's apprentice. W. A. Fink. *Metal Work* 83:888-9; 84:30-1 Je 18, JI 2 '15

Works apprentice school discontinued. *Iron Age* 96:1834-5 Je 17 '15

See also Corporation schools; Industrial education; Schools and shops, Cooperation of

**Aquariums**

Aquarium and winter house for birds for the city of Boston. W. D. Austin. II plans *Brickb* 24:47-50 F '15

Collections of the New York aquarium. R. W. Shufeldt. II *Sci Am* S 80:52-3 JI 24 '15

**Aqueducts**

Bradford waterworks. II plan maps *Engineer* 119:251-4, 278-80 Mr 12-19 '15

Construction features of the Greater Winnipeg water works. J. H. Fuertes. diag *Eng & Contr* 44:377-80 N 10 '15

Curves on Winnipeg aqueduct built with straight sections of forms. II diag *Eng Rec* 72:657-8 N 27 '15

Design and construction of the new supply conduit (Nopaug) of the Hartford, Conn., water works. C. M. Saville. *Eng & Contr* 43:23-6 Ja 13 '15

Direct control over construction materials is feature of 100-mile Winnipeg aqueduct. II *Eng Rec* 71:594-6 My 8 '15

Hydrostatic catenary flume on a concrete aqueduct. H. B. Muckleston. II diag map *Eng N* 74:58-3 JI 8 '15

Method and cost of making test borings for the Winnipeg Shoal lake aqueduct. D. L. McLean. II diag *Eng & Contr* 43:316-18 Ap 7 '15

Progress on the Greater Winnipeg aqueduct. II *Eng N* 73:230-1 F 4 '15

Roman aqueduct near Tarragona, Spain. J. R. Rippey. II diag *Eng N* 74:51 JI 8 '15

See also Catskill aqueduct; Los Angeles aqueduct

**Cost**

Unit bidding prices of contractors awarded construction of 85-mile concrete aqueduct, Winnipeg, Man. *Eng & Contr* 42:sup32 O 21 '14

**Aquiltania (steamship)**

Electricity on board ship. J. Lowson. *Elec R & W Elec N* 65:1189 D 19 '14

**Aramean language**

How we got our alphabet. W. Rice. *Inland Ptr* 54:508-9 Ja '15

**Arbitration, industrial**

Arbitration award in enginemen's wage controversy; text. *Ry Age* 58:902-5 My 7 '15

Arbitration of Albany strike. *Elec Ry J* 46:460 S 11 '15

Arbitration of western engineers' and firemen's demands. *Ry Age* 57:1043-4, 1084-5, 1123-4; 58:97-8, 125-7, 198-200, 232-4, 264-6, 307-10, 363-5, 409-11, 448, 751-2 D 4-18 '14, Ju 15-Mr 12, Ap 2 '15

Award of arbitrators in the western wage controversy. *Ry R* 56:524-5 My 8 '15

Bay State street railway arbitration. *Elec Ry J* 45:708-10, 854, 1019-21, 1205-6 Ap 10, My 1, 29, Je 26 '15

Chicago arbitration. *Elec Ry J* 45:1128; 46:34, 75-6 Je 12, JI 3-10 '15

Chicago arbitration award. *Elec Ry J* 46:118 JI 17 '15

Chicago's two-day strike. *Elec Ry J* 45:1165-8 Je 19 '15

Disturbance over the western arbitration. *Ry Age* 58:959-60 My 7 '15

Employees receive increase in Chicago. *Elec Ry J* 46:148-9 JI 24 '15

Holyoke arbitration. *Elec Ry J* 46:883 O 23 '15

Industrial mediation and conciliation. J. Kruttschnitt. *Ry R* 56:636-7 My 8 '15; Excerpts. *Ry Age* 58:1126-7 My 28 '15

Joliet, Ill., arbitration decision rendered. *Elec Ry J* 46:1003 N 13 '15

Labor and arbitration. *Elec Ry J* 46:174-5 JI 31 '15

Public regulation of wages of railway employees. F. H. Dixon. *Ry Age* 58:920-32 Ap 30 '15

Rhode Island wage arbitration. *Elec Ry J* 46:903-5 O 30 '15

Syracuse arbitration. *Elec Ry J* 45:999 My 22 '15

See also Labor and capital

**Arbitration and award**

Arbitration provision for building contracts. E. T. Thurston. *Eng & Contr* 43:199 Mr 3 '15

**Arc, Electric. See Electric arc****Arc lamps. See Electric lamps, Arc**

Arc phenomena. A. G. Collins. II diag *Am Inst E* 19 Pro 34:2081-2100 S '15

**Arched bridges. See Bridges, Arched****Archeology**

Ancient relics unearthed in war trenches. II *Sci Am* 113:342 O 16 '15

Curiosities of bygone ages: relics from New Mexico and from Bible lands. II *Sci Am* 112:87-4 Ja 23 '15

See also Inscriptions; Monuments; Temples

**Arches**

Arched reinforced-concrete conduits designed by the theory of least work. W. M. Smith. *Eng Rec* 71:648-52 My 22 '15

Arching in collories. R. G. Clark. diag *Colliery* 25:292-6 Ja '15

Design methods in concrete construction—arches with fixed ends. A. M. Wolf. diag *Concrete Cem* 7:137-44 O '15

**Arches--Continued**

- Discussion of the essentials of design of reinforced arch structures. *diag* Concrete Com 5:239-41 D '14
- Field methods in concrete construction arch centers; design and construction. J. Cochran. Concrete Com 7:107-10 S '15
- First reinforced concrete arch in America. J. W. Pearl. *diag* Concrete Com 7:75-6 Ag '15
- Graphical analysis of arches with fixed ends greatly simplified. C. S. Whitney. Eng Rec 72:324-6 S 11 '15
- Lake Erie & Eastern R. R.; concrete arch at Mahoning avenue, Youngstown. II plan Rty R 57:134-5 J1 31 '15
- Method for determining two-hinged arch reactions. C. S. Whitney. Eng & Contr 44: 123-4 Ag 18 '15
- Reinforced-concrete conduit analysis simplified by theory of displacements. C. S. Whitney. Eng Rec 72:486-8 O 16 '15
- Simple method of determining the stresses in concrete arches due to temperature and rib shortening. H. R. Thayer. Eng & Contr 41: 173-4 S 1 '15
- Theory of the arch in mining. H. S. Randolph. Colliery 35:427-9 Mr '15
- See also* Architecture; Bridges; Arched; Culverts; Strains and stresses

**Architects**

- Architect and the client. O. La Farge. Am Inst Arch J 2:557-9 D '14
- Architect and the public. W. L. Steele. Am Inst Arch J 3:492-5 N '15
- Architect's part in the world's work. F. L. Ackerman. Arch Rec 37:149-58 P '15
- As he is known, being brief sketches of contemporary members of the architectural profession. *para* Brickh 24:25-6 Ja '15
- Circular of advice relative to principles of the professional practice and the canons of ethics of architects. Am Inst Arch J 3:103 Mr '15
- Five orders of architects. Bldg Age 37:311 J1 '15
- Professional and other incompetence. Am Inst Arch J 3:73-5 P '15
- Relation of the architect and the engineer. D. D. Kimball. Heat & Vent 12:13-18 Mr: 26-30 Ap '15
- See also* Burnham, D. H.; Vandromer, Emile; Ware, W. R.

**Fees**

- Fees: a reductio ad absurdum. T. Thumtack. Arch & Bldg 40:418-20 N '14

**Law**

- Admission to practice: the proposed law in Victoria, New South Wales. Am Inst Arch J 3:40-1 Ja '15
- Architects as independent contractors. A. L. H. Street. Bldg Age 37:64-6 N '15
- Right to lien for plans not used. A. L. H. Street. Bldg Age 37:67-8 Mr '15
- See also* Architects--Licenses

**Licenses**

- Architects' license law in Illinois. Eng N 73: 500-1 Mr 11 '15
- Architects' license law in Illinois. A. Allen. Eng N 73:644-6 Ap 1 '15
- Architects must be registered in New York. Eng Rec 71:706 Je 6 '15
- Architects versus engineers; Illinois engineers win fight for legal recognition. Assn Eng Soc J 54:277-99 Je '15
- Effect of architects' license laws upon engineers. Eng N 73:332-3 P 25 '15
- Illinois law admitting to practice defended. P. B. Wight. Am Inst Arch J 3:87-8 P '15
- Registration and licensing of architects. Am Inst Arch J 2:575-7 D '14
- Registration law aims solely at raising professional standards. D. E. Wald. Eng Rec 71:743 Je 12 '15
- Report of the Illinois state board of examiners of architects. F. M. Barton. Eng & Contr 42:411-12 O 28 '14
- Architectural acoustics.** *See* Acoustics, Architectural

**Architectural competitions.** *See* Architecture - Competitions

**Architectural draughtsmen:** John Ruskin. II: Winslow. II Am Inst Arch J 3:106 20 O '15

**Architectural draughtsmen:** Richard Parkes Bonington. II: Winslow. II Am Inst Arch J 3:159-67 Ap '15

**Architectural drawing**  
Elementary perspective drawing. G. W. Kittredge. II Bldg Age 37:30-2 Ap, 31 3 May, 21 6 Je; 25-8 J1; 21-6 Ar; 35-8 S; 32-1 O '15 (to be cont)

*See also* Architectural rendering; Architecture--Details; Blue prints; Mechanical drawing

**Architectural education**

American schools of architecture. E. R. Rossmore. Am Inst Arch J 3:106 12 Mr '15

Education. C. G. La Farge. Am Inst Arch J 3:119-20 Mr '15

**Architectural ironwork.** *See* Ironwork, Architectural

**Architectural rendering**

Comparison of French, English, and German work. II Brickh 23:301 4 D '14

**Architectural societies**

First architectural society in America. R. W. Haddon. Arch Rec 38:77 5 Ar '14

**Architecture**

Art through the emancipation of the workman. R. A. Cuth. Am Inst Arch J 3:217 3 Je '15

Battle with chaos, the architectural side of city planning. F. L. Ackerman. Am Inst Arch J 3:111 1 O '15

Concrete: a medium of aesthetic expression. L. K. Pond. Concrete Com 6:119-20 Mr '15

Dead hand in architecture (Mobile contact. R. F. Bach. Brickh 21:163 3 Je '15

Influence on architecture of the condition of the worker by T. S. Atiles. Review by F. L. Ackerman. Am Inst Arch J 2:547 30 D '14

Point of view in approaching the study of architecture. C. H. Lobb. Am Inst Arch J 3:200 2 My '15

*See also* Acoustics, Architectural; Arched; Architects; Architectural drawing; Architectural rendering; Arched; Art; Art galleries; Auditoriums; Bank buildings; Bathing; Public; Bridge portals; Bridges; Buildings; Building materials; Buildings; Capital buildings; Castles; Cellars; Chimneys; Church architecture; Clubhouses; College architecture; Color in architecture; Columns; Concrete construction; Considered homes; Cornices; Decoration and ornament; Domes; Doors; Drawings; Factories; Farm buildings; Fireplaces; Fireproof construction; Floors; Foundations; Furniture; Houses; Garages; Gateways; Grain elevators; Greenhouses; Gymnasiums; Heating; High buildings; Hospitals; Hotels; Industrial buildings; Ironwork; Architectural; Library architecture; Lodges; Loft buildings; Machine shops; Market buildings; Marquise (architecture); Masons; Bridges; Masonry; Mills and millwork; Monuments; Moving picture theaters; Multistoried buildings; Mural painting and decoration; Naval architecture; Newspaper offices; Office buildings; Partitions; Pavilions; Planning; Printing offices; Public comfort stations; Railroads; Buildings; Railroads; Stations; Roofs; Schoolhouses; Sheet metal work; Architectural; Skidder; Flatways; Steel construction; Stone fronts; Strains and stresses; Strength of materials; Tea rooms and tea houses; Temples; Theaters; Towers; Towers; Ventilation; Walls; Warehouses; Windows; Young women's Christian association buildings

**Bibliography**

- Books on medieval architecture. II: P. Bach. Arch Rec 37:474-8, 522-4 My Je '15
- Current index of architectural literature. New monthly numbers of Journal of the American Institute of architects

**Architecture—Continued****Competitions**

School building in Michigan and Connecticut. Am Inst Arch J 3:437-8 O '15

Society of Beaux-arts architects: awards. See monthly numbers of Journal of the American institute of architects

**Contracts**

See Building contracts

**Designs and plans**

Work of Burnham & Root, D. H. Burnham, D. H. Burnham & co. and Graham, Burnham & co. A. N. Reberl. II plans Arch Rec 38:32-168 J1 '15

**Details**

Early American architectural details: Tucker-llice porch, Salem, Mass. Brickb 24:pl 1 Ja '15

Villa Madame: text and measured drawings by Howard W. Germann. II Arch Rec 37:26-47 Ja '15

See also Ceilings; Doorways; Stairways

**Study and teaching**

See Architectural education

**Belgium**

Architect's impressions in Belgium. E. T. Richmond. II Am Inst Arch J 3:153-8 Ap '15

Belgium and some of its buildings. J. Y. Dunlop. II Bldg Age 37:33-6 Ap '15

Destruction of architectural monuments in Belgium. R. A. Gram. Am Inst Arch J 3:185-6 Ap '15

Report of a German commission upon the destruction of architectural monuments in Belgium. R. D. Kohn. Am Inst Arch J 3:130-2 Mr '15

**France**

Jean Louis Pascal—institute gold medalist. 1913. W. Cook. II Am Inst Arch J 3:19-26 Ja '15

**Germany**

Modern German architecture. J. K. Pond. II Brickb 24:213-16, 243-7 S-O '15

**Great Britain**

Monumental classic architecture in Great Britain and Ireland during the 18th and 19th centuries by A. R. Richardson. Review by J. G. Howard. Am Inst Arch J 3:27-9 Ja '15

**Mexico**

Phases of Spanish colonial architecture. M. Wilcox. II Arch Rec 37:535-46 Je '15

**Peru**

Phases of Spanish colonial architecture. M. Wilcox. II Arch Rec 37:535-46 Je '15

**Spain**

Some old and unfamiliar Spanish buildings. A. C. Ilyne. II Brickb 23:58-61, 106-9, 226-9, 249-52; 24:43-6, 85-8 Mr, My, S-O '14, F, Ap '15

**United States**

Work of Burnham & Root, D. H. Burnham, D. H. Burnham & co. and Graham, Burnham & co. A. N. Reberl. II plans Arch Rec 38:32-168 J1 '15

See also Architecture, Colonial; Architecture, Domestic—United States

**Virginia**

Early architecture of the Rappahannock valley; Cleve manor. F. C. Baldwin. II diag plan Am Inst Arch J 3:234-40 Je '15

Early architecture of the Rappahannock valley; Gay Mont and Belle Grove. F. C. Baldwin. II diag plans Am Inst Arch J 3:328-30 Ag '15

Early architecture of the valley of the Rappahannock; Kenmore. F. C. Baldwin. II plan Am Inst Arch J 3:113-18 Mr '15

Architecture, American. See Architecture—United States; Architecture, Colonial

**Architecture, Ancient**

Mysterious Babel, whose magnificent temples show the hands of many ages and nations. Mrs. T. H. LePage. II Sci Am S 78: 407-10 D 26 '14

**Architecture, Colonial**

Colonial architecture in Connecticut. W. S. Bessell. II diag Arch Rec 37:360-9, 445-52, 547-58; 38:672-80 Ap-Je, D '15

Early architecture of the valley of the Rappahannock. F. C. Baldwin. II diag plans Am Inst Arch J 3:113-18, 234-40, 328-36 Mr, Je, Ag '15

Modern colonial doorways. B. Griswold. II Arch Rec 38:246-52 Ag '15

Seventeenth century New England house at Topsfield, Mass. D. Millar. II plans Arch Rec 38:348-61 S '15

Stairways in houses of moderate cost; colonial type of stairway. J. T. Fallon. II diag plans Brickb 24:169-63 J1 '15

Three types of Georgian architecture: the evolution of the style in Philadelphia. H. D. Thorleim. II diag Arch Rec 37:169-76 F '15

**Bibliography**

Books on colonial architecture. R. F. Bach. bibliog Arch Rec 38:281-6, 379-82, 592-4, 690-3 Ag-S, N-D '15 (to be cont)

**Architecture, Domestic**

Trend of modern home building; tendency toward fireproof construction. II plans Bldg Age 37:71-2 1 '15

See also Apartment houses; Bungalows; Chimney clocks; Concrete houses; Cottages; Country houses; Doorways; Duplex houses; Farm buildings; Farmhouses; Fireplaces; Fraternity houses; Heating; House decoration; Housing problem; Lodges; Plumbing; Stairways; Stucco; Window seats

**Designs and plans**

Architect's country house: residence of Elettus Litchfield, New Canaan, Conn. H. T. Bottomley. II diag Arch Rec 37:48-63 Ja '15

Architectural design as an aid to real estate promotion; principles of group planning applied to small suburban houses, Jamaica, L. I. G. H. Irving. II plans Brickb 23:295-6, pl 191-2 D '14

Attractive home for the suburbs. II diag plans Bldg Age 37:19-28 F '15

Country house architecture in the East. H. D. Litchfield. II plans Arch Rec 38:462-88 O '15

Country house architecture in the middle West. P. B. Wight. II plans Arch Rec 38: 385-421 O '15

Country house architecture on the Pacific coast. L. C. Mullgardt. II plans Arch Rec 38:423-51 O '15

Country house built of concrete. II diag plans Bldg Age 37:42-4 F '15

Country house with clapboard walls. II diag plans Bldg Age 37:43-5 Ja '15

Country house with stucco walls. II diag plans Bldg Age 37:42-5 Mr '15

Design for a six-room country house. II diag Bldg Age 37:42-5 D '15

Double house for a 50 ft. lot. II plans Bldg Age 37:42-4 N '15

Ellen Wilson memorial homes to be erected at Washington, D. C. G. H. Ford. II plans Am Inst Arch J 3:352-7 Ag '15

Examples of the work of Olin & Clark. H. Croly. II plans Arch Rec 37:385-409 My '15

Five-room stucco finished cottage. II plans Bldg Age 37:42-5 O '15

Follow the house with shingle roof. II diag plans Bldg Age 37:42-5 My '15

House at Jamestown, N. Y. II plans Arch & Bldg 47:268 J1 '15

House of N. P. Hollowell, Esq., Readville, Mass., house of Miss M. Watson, Gedney Farms and others; views and plans. Brickb 23:pl 185-90 1 '14

House of M. W. Labrot, Esq., Annapolis, Md. Brickb 24:pl 121-3 N '15

Houses of Charles A. Cass, Ardsley Park, N. Y. and G. S. Mandell, Hamilton, Mass. Brickb 24:pl 8-13 Ja '15

Houses of Charles Paxton, Lake Forest, Ill., and others. Brickb 24:pl 76-85 Je '15



**Architecture, Domestic - Designs—Continued**

- Houses of Guilford, Baltimore, Md.; views and plans Brickb 24:223-7, pl 124-35 S '15
- Houses of James Parneelee, Washington, D. C., and others, Brickb 24:pl 66-76 My '15
- Houses of T. C. Dennehy, Esq., Mrs. M. S. Flood and others; views and plans, Brickb 24:pl 23-30 F '15
- Low cost cottage with shingle roof intended for erection on a lot having forty feet frontage, 11 diagr plans Bldg Age 37:42-5 S '15
- Modern version of the early Pennsylvania country house, C. M. Price, 11 plans Arch Rec 37:76-81 Ja '15
- Portfolio of current architecture, 11 Arch Rec 37:371-8, 465-9; 38:663-71 Ap-May, 15 '15
- Progressive architectural construction, F. Squires, Arch & Bldg 47:supl-2 Jl '15
- Residence design, 11 plans Arch & Bldg 47:78-81 F '15
- Residence of an Illinois architect, 11 diagr plans Bldg Age 37:19-25 D '15
- Residence of Charles S. Walton, Esq., R. D. Murray, Arch Rec 38:501-23 N '15
- Residence of P. B. Drury, Esq., Cleveland, Ohio, 1, T. Feary, 11 plans Arch Rec 38:501-14 D '15
- Residence of S. Harkness, Esq., Garden Point, near New London, Conn., 11 plans Arch & Bldg 47:378a O '15
- Residences designed by Rowe & Smith, 11 Arch & Bldg 47:306-11 Ar '15
- Stone dwelling for the suburbs, 11 plans, Bldg Age 37:12-5 Je '15
- Suburban home of tile and stucco, 11 plans Bldg Age 37:19-21 My '15
- Suburban house of stucco finish, 11 diagr plans Bldg Age 37:42-5 Ar '15
- Two-family house at East Orange, N. J., 11 plans Bldg Age 37:61-2 Je '15
- Two floor plans for southern homes, plans: Bldg Age 37:40-1 S '15
- Week-end house at Arkley, N. Y., of Adolph Lawbolm, Esq., Arch Rec 38:177-83 Jl '15
- Western home of frame construction, C. A. Park, 11 plans Bldg Age 37:37-31 N '15
- Yama Shiro, the Japanese villa of Adolph L. and Eugene Bernheimer, F. M. Small, 11 plan Arch & Bldg 47:312-20 Je '15

**England**

- Old timbered houses; examples of old post and plaster work of the 15th and the 16th centuries, 11 Bldg Age 37:65-6 Ar '15

**Italy**

- Villa Madonna; text and measured drawings by Howard W. Germain, 11 Arch Rec 36:600-10; 37:26-47 D '14-Ja '15

**United States**

- Architectural reclamation of small arena in cities, 11, D. Eberlein, 11 Arch Rec 37:1-25 Ja '15
- Colonial architecture in Connecticut, W. S. Remond, 11 Arch Rec 37:560-9, 445-52, 547-55; 38:672-80 Ap-Je, 15 '15
- Country house architecture in the East, E. D. Litchfield, 11 plans Arch Rec 38:452-88 O '15
- Country house architecture in the middle West, P. B. Wright, 11 plans Arch Rec 38:385-421 O '15
- Country house architecture on the Pacific coast, L. C. Mulholland, 11 plans Arch Rec 38:423-51 O '15
- Early architecture of the valley of the Happa-humock, F. C. Ishiwin, 11 diagr plans Am Inst Arch J 3:113-18, 234-40, 328-30 Mr, Jr, Ar '15
- House of Arthur A. Fowler, Esq., R. V. Meeks, 11 plans Arch Rec 38:193-205 Ar '15
- Recent interiors by Thornton Chard; views, Arch Rec 37:177-80 F '15
- Residence construction in Indiana, J. P. Hobbart, 11 plans Bldg Age 37:47-52 O '15
- Residence of Charles S. Walton, Esq., R. D. Murray, 11 plans Arch Rec 38:501-23 N '15
- Seventeenth century New England house at Topsfield, Mass., D. Millar, 11 plans Arch Rec 38:348-61 S '15
- Stuart Duncan residence at Newport, 11, Grady, 11 plan Arch Rec 38:289-309 M '15
- Three types of Georgian architecture; the evolution of the style in Philadelphia, 11, D. Eberlein, 11 diagr Arch Rec 37:159-78 F '15

**Architecture, Ecclesiastical.** See Church architecture

**Architecture, Greek**

Greek refinements; studies in temperamental architecture, by W. H. Goodyear, Review, Arch Rec 37:281-6 Mr '15

**Architecture, Japanese**

Yama Shiro, the Japanese villa of Adolph L. and Eugene Bernheimer, F. M. Small, 11 plan Arch & Bldg 47:312-20 Je '15

**Architecture, Medieval**

Books on medieval architecture, R. F. Bach, Arch Rec 37:1-18, 565-6 My Je '15

**Architecture, Roman**

Roman architecture and its critics, A. D. F. Hamlin, 11 Arch Rec 37:15-36, 163-65 My Je '15

**Architecture, Rural.** See Country houses; Farm buildings

**Architecture, Spanish**

Panama-California exposition, San Diego, California; Bertram C. Goodhue and the renaissance of Spanish colonial architecture, C. M. Price, 11 plan Arch Rec 37:229-31 Mr '15

Phases of Spanish colonial architecture, M. Wilcox, 11 Arch Rec 37:2-5 Je '15

See also Architecture Spain

**Arctic exploration**

Autonomy in the Arctic, R. W. Porter, Sci Am 8:3939-40 Ja '15

Capt. Bingham's Arctic expedition, Sci Am 112:201 F 27 '15

Crocker land expedition, Sci Am 111:489 D 12 '14

Food for polar explorers, P. Blackinton, Sci Am 11:2936-7 Ja '15

Relief from the second Crocker expedition, Sci Am 11:2936-7 Ja '15

Stellar and new found land, H. J. Spinden, 11 map Sci Am 113:285-7 Oct '15

Who will rescue the lost explorers? Sci Am 112:150 F 20 '15

**Area measurement**

Reducing decimals of an acre to square feet; table, F. H. Tibbitt, Eng N 74:97-7 '15

Reducing square feet to decimals of acres, Eng N 74:263 Ag 19 '15

**Argentina**

Banking and credit in Argentina, Brazil, Chile, and Peru, F. N. Hedges, 11 J Int Fin & Com Com 20:1-7 '15

Electrical conditions in Buenos Aires and Argentina, E. E. & W. E. E. 66:124-6 Ja '15

Financial developments in South American countries, W. H. Long, 11 J Int Fin & Com Com 19:37-1a '15

Making friends with the South American, R. R. Nason, 11 Metal Work 83:377-9 Mr 12 '15

**Commerce**

Argentina's need is America's opportunity, Metal Work 84:13-14 '15

Cotton textile in Argentina, Textile World 49:318-21, 414-17 Jo Jl '15

Outlook for American goods in Argentina, A. E. de Hoch, Am Ind 15:30-1 F '15

Pan American trade Argentina, A. M. Hogan, map Am Ind 15:26-3 O '15

**Sanitary affairs**

Water supply and drainage in Argentina, A. Dale, 11 Metal Work 84:103-6 Jl 23 '15

**Argon**

Notes on the noble gases, W. S. Andrews, Gen Elec 11:18:226 Mr '15

**Arithmetic**

See also Measurement; Multiplication

**Study and teaching**

Teaching arithmetic with the selling price as a base for finding profits, Dom Bok 72:179 Ar 7 '15

**Arithmetic, Commercial**

See also Calculating machines; Discount; Interest

Arithmetical machines. See Calculating machines

**Arizona****Industries and resources**

- Arizona in 1914; mining industries. map Eng & Min J 99:106-7 Ja 9 '15  
Valuation of Arizona's producing mines. Eng & Min J 100:469 S 18 '15

**Arizona copper company**

- Cost of cars, electric locomotives, etc., for Arizona copper co.'s new smelter. diags Eng & Min J 99:495 Mr 13 '15  
Design, construction and unit costs of the power house for the new smelter of the Arizona copper co., ltd., Clifton, Ariz. diags plans Eng & Contr 42:262-5 S 18 '14  
Unit construction costs from the new smelter of the Arizona copper co., ltd. E. H. Jones. diags Am Inst Min E Bul 91:1497-1649 JI '14; Abstract. Eng & Contr 42:560-3 D 16 '14

**Arkansas****Industries and resources**

- Occurrence and origin of the bauxite deposits of Arkansas. W. J. Mead. pls Econ Geol 10:28-54 Ja '15

**Armaments**

- Invisible man behind the gun. Sci Am 112:46 Ja 9 '15

See also Armies; Navies

**Armatures**

- Direct-current armature winding principles. J. Glantz, jr. Power 41:335-8 Mr 9 '15  
Experimental data concerning the safe operating temperature for mica armature-coil insulation. F. D. Newbury. diags Am Inst El Pro 34:2555-72 O '15; Abstract. Elec W 66:1206-6 N 27 '15  
Incremental armature copper losses at no-load and armature teeth fully-current losses. A. Press. diags Inst El 13 J 53:820-3 Jo 15 '15  
Methods of removing the armature from box frame railway motors. J. L. Booth. II Gen Elec R 18:908-15 S '15  
One method of locating faults in an armature. P. M. Blough. Elec R & W Elec'n 66:343 E 20 '15  
Protecting armature coils from cutting on hand wire. W. A. Ernst. Elec Ry J 46:1089-90 N 27 '15  
Rewinding direct-current motors and generators. A. A. Fredericks. diags Power 42:76-8, 116-18, 148-50 JI 20-Ag 3 '15  
Slot insulation design, with comparison between the unit dielectric stresses in the slot insulation of a low-voltage alternator and those in a high-voltage machine. H. M. Hobart. Gen Elec R 18:366-71 My '15  
Small vs. large 550-volt armatures. B. Dawson. Power 42:422 S 21 '15  
Soldering commutators and rotors. G. Fox. diags Power 42:328-9 S 7 '15  
Solenoid and electromagnet windings. G. L. Hodges. Am Inst El Pro 34:2595-2614 N '15  
Space distribution of flux density. A. Stull. Elec W 65:1679-82 Jo 26 '15  
Two-phase and three-phase lap windings in unequal groups. B. M. Tingley. Elec R & W Elec'n 66:166-8 Ja 21 '15  
Universal armature machine. II Elec Rty J 46:412-13 S 4 '15

See also Commutators; Dynamos; Electromagnets

**Armies**

- Clothing a winter army. Sci Am 112:215+ Mr 6 '15

See also Military art and science; Military hygiene; Navies; War

**Commissariat**

- Flour molas and army rations. W. P. Pyeratt. II Sci Am S 80:333 N 20 '15

**Armor plate**

- Cost of a government armor plate plant. Iron Age 95:674-5 Mr 25 '15  
New Krupp armor plates. Sci Am 113:338 O 16 '15

**Armories**

- Drill room, University of Illinois, requires 23,000 square feet of direct radiation. G. B. Hice. II diags Heat & Vent 12:13-23 S '15

- End framing for armory at University of Illinois and some general features of this structure. II diags Eng & Contr 42:141-3 F 17 '15

**Armour car lines**

- Private car lines not common carriers. Ry Age 58:1051-2 My 21 '15

**Arms and armor**

See also Guns; Helmets; Pistols; Rifles

**Army rations.** See Armies—Commissariat**Arrowrock dam**

- Completion of Arrowrock dam. M. F. Cunningham. II Sci Am 113:343 O 16 '15  
Construction of the Arrowrock dam. C. H. Paul. II Boston Soc C B J 2:337-49 N '15  
Log-handling equipment at Arrowrock dam. C. H. Paul. diags map Eng N 74:200-1 JI 29 '15  
Messhouse management at the Arrowrock dam. R. R. Clawson. II Eng N 73:1201-3 Jo 24 '15  
Progress on Arrowrock dam. C. H. Paul. II Eng N 73:370-1 F 25 '15

**Arsenic**

- Distribution of arsenic in liver tissue in cases of poisoning. L. A. Ryan. Am Chem Soc J 37:1959-60 Ag '15

- Electrolytic separation of zinc, copper and iron from arsenic. A. K. Balls and C. C. McDonnell. J Ind & Eng Chem 7:26-9 Ja '15

See also Dipping fluids, Arsenical

**Arsenical dipping fluids.** See Dipping fluids, Arsenical**Arsenious oxide**

- Arsenious oxide as an alkalimetric standard. A. W. C. Menzies and F. N. McCarthy. Am Chem Soc J 37:2031-4 S '15

- Vapor pressure of arsenic trioxide. H. V. Welch and L. I. Dushak. II U S Bur Mines Tech Pa 81:1-20 '15

**Arsenious sulphide**

- Couagulation of arsenious sulfide sol by electrolysis. J. Mukhopadhyaya. Am Chem Soc J 37:2024-31 S '15

**Art**

- Ministry of art, by R. A. Cram. Review by R. F. Bach. Arch Rec 37:187-9 F '15

See also Architecture; Decoration and ornament; Design, Decorative; House decoration; Mural painting and decoration; Photography

**Art galleries**

- Dedication of the Minneapolis institute of arts. B. H. Hewitt. Am Inst Arch J 3:85-6 F '15  
Montreal art gallery. T. W. Ludlow. II plans Arch Rec 37:133-48 F '15  
Parrish museum, Southampton, Long Island. C. C. May. II plans Arch Rec 38:524-39 N '15

**Lighting**

- Glare in museum galleries; the psychological factor in the lighting problem. B. I. Gilman. diags Arch Rec 38:262-80, 363-78 Ag-S '15  
Nitrogen-filled lamps in Boston art museum. II Elec W 66:481-2 Ag 28 '15

**Artesian wells**

- Experience with artesian well water at Elgin, Illinois. L. R. Parkin. Am Water Works Assn J 24:07-9 Jo '15

- Kynuna wells—a test case of rock pressure. J. W. Gregory. map Econ Geol 9:768-75 D '14

- Method of testing verticality of a deep well at Audubon, Iowa. P. F. Hopkins. Eng & Contr 42:559 D 16 '14

- Studies of artesian waters in Chicago and surrounding territory. C. B. Anderson and F. W. DeWolf. map Am Water Works Assn J 2:318-23 Jo '15

- Thal influence on artesian well at Seattle. H. M. Chittenden. Eng N 74:492 S 9 '15

**Artificial daylight.** See Daylight, Artificial**Artificial ice.** See Ice—Manufacture**Artillery**

- Field artillery and ammunition. G. B. Jewell. II diags Eng M 49:698-711 Ag '15

- Giant artillery of fifty years ago. Sci Am S 80:80 JI 31 '15  
Mathematics and artillery science. G. Greenhill. Sci Am S 79:143 F 27 '15

**Artillery—Continued**

Notes on coast artillery hits. E. C. M. Stahl. II diags Sibley J 29:67-78 D '14  
Proving grounds for French artillery: a laboratory battlefield. J. Boyer. II Sci Am 113: 116-7 Ag 7 '15  
Spendthrift artillery. Boissonnet. Sci Am 113: 408 N 6 '15

See also Gunnery; Guns (ordnance); Naval guns

**Artists**

Random reflections on artists and scientists. Sci Am 112:229 Mr 6 '15

**Asbestos**

Asbestos in southern Quebec. J. A. Dresser. II Am Inst Min 19 Bul 93:2267-74 S '14; Discussion. 100:861-3 Ap '15  
Corrugated asbestos cement sheets for roofing and siding. diags Eng & Contr 44:214 S 15 '15; Iron Age 90:407 Ag 19 '15; Ry Age 69:537 S 17 '15; Ind Eng 16:103-4 S '15; Am Gas Light J 103:220-1 O 4 '15  
Facts about asbestos. Power 42:493 O 5 '15  
Growth of the asbestos industry. Textile World 50:128-9 O '15  
United States the greatest user of asbestos. Dom Eng 72:270 Ag 28 '15

**Ascaridolic acid**

Resolution of ascaridolic acid. E. K. Nelson. Am Chem Soc J 36:3521-2 D '14

**Ash**

Hickories, elms and ash trees. W. H. Miller. II Am For 21:719-20 Jo '15  
Use of native woods for interior finish. C. M. Price. II Brickb 24:243 O '15

**Ash handling**

Ash and refuse dumping board. West 77th st., North river, New York city. C. W. Simmelford. diags Eng N 73:166-7 Ja 28 '15  
Coal and ash handling at the gorge plant of the Northern Ohio traction & light co. A. D. Williams. II diag Power 42:398-400 S 21 '15  
Cost of handling ashes with steam vacuum system. R. H. Miller. Power 41:820 Jo 15 '15  
Cost of operating vacuum ash-handling systems. C. O. Sandstrom; R. H. Miller. Power 41:412 Mr 23 '15  
Details of heating and ventilating work; standard designs for ash conveyor belt and chutes for ash cans. F. G. McAnnam. diags Metal Work 84:458 O 8 '15  
Dredge pump handles ashes. O. D. Havard. diag Power 41:580 Ap 27 '15  
Dust-free suction of ashes and slag; abstract. F. Hartmann. Am Soc M 19 J 37:184-5 Mr '15  
Eliminating smoke, soot and dirt in steam generation. II Textile World 43:566-7 Ag '15  
Mechanical handling of coal and ashes in the power plant. C. C. Brinley. II diags Eng M 49:872-87; 50:65-77 R-O '15

Ashe. See Ash handling; Coal ashes; Wood ashes

**Asphalt**

Asphaltic materials for road construction. A. A. Borkowitz. Eng & Contr 42:161-3 Ag 12 '14; Same. Munic Eng 47:464-7 D '14  
Briquetting plant of the Pacific coast coal co., at Briquetville near Renton, Washington; use of asphalt for binder. C. M. Lewis. II Colliery 35:227-31 D '14  
Cementing value of bituminous binders. L. Kirschbrunn. II diags J Ind & Eng Chem 6:976-85 D '14; Same. Eng & Contr 42:33-43 Ja 13 '15  
Contributions of the chemist to the asphalt industry. J. L. Rake. J Ind & Eng Chem 7:276 Ag '15  
Differentiation of natural and oil asphalts. W. C. Paffler. J Ind & Eng Chem 6:286-9 Ap '14; Same. Eng & Contr 42:347-9 O 7 '14  
Interesting application of colloidal chemistry. D. T. Pierce. Met & Chem Eng 13:408-9 Ji '15  
Kentucky rock asphalt road. C. D. Chain, jr. Munic J 39:365-6 S 2 '15  
Mining Trinidad asphalt. II Eng & Min J 99: 483 Mr 13 '15  
Purchase of asphalt and asphaltic cement on the bituminous basis. D. T. Pierce. Eng & Contr 42:160 F 17 '15

Purchase of asphalt and asphaltic cement on the bituminous basis. W. H. Broadhurst. Eng & Contr 42:85-6 Ja 27 '15  
Rock asphalt in the Philippines. Munic J 39: 432-3 S 16 '15

See also Bituminous materials; Pavements; Asphalt

**Testing**

Kansas City, Mo., maintains open asphalt specifications. C. E. Mandigo. II Eng N 71: 642-4 S 30 '15  
Practical testing of asphalt and road oil. T. A. Fitch. Eng & Contr 44:367 S N 10 '15  
Testing the competency of asphalt. II Sci Am 113:236 / S 11 '15

**Asphalt plants**

Asphalt distributor. II Good Roads n 2 10-163 Ag 7 '15  
Electricity in stone quarries and asphalt plants. II Elec R & W Elec'n 67:315 16 Ag 21 '15  
Portable asphalt mixing plant. II Good Roads n 2 10:68 9 Ji 3 '15

**Asphalt plants, Municipal**

Brown borough asphalt plant. II Munic J 39: 215 16 Ag 13 '15  
Canden's municipal asphalt plant. II Munic J 38:127-9 F 4 '15  
City plant uses old asphalt for New York. II Eng Rec 71:617 My 22 '15  
Cost of asphalt repair in Pittsburg. J. B. Townley. Munic Eng 15:361 My '15  
Harrisburg's municipal asphalt plant. II Munic J 39:361 S 8 '15  
Municipal plant reduces asphalt maintenance cost in New York. H. W. Durham. Eng Rec 71:238-9 F 20 '15  
New municipal asphalt plant at Pittsburgh. N. S. Sprague. II Munic Eng 47:464-7 D '14  
New municipal asphalt plant for borough of Manhattan. II W. Durham. II diag. Munic Eng N 2 10:71 Jo 3 '15  
Operating Manhattan asphalt plant. W. Goldsmith. II plan Munic J 39:413 S 15 '15  
Pittsburgh's municipal asphalt plant. II Munic J 39:411-3 Ji 9 '15  
San Francisco municipal asphalt plant. A. J. Cleary. plan Eng N 73:315 10 F 18 '15

Asphaltic concrete. See Pavements; Bituminous concrete

**Asphyxiating gases, See Gases, Asphyxiating****Assaying**

Assay of sample cobaltous acid sulfate method. diags Eng & Min J 100:271 2 15 '15  
Assay of precious metal bullion. P. P. Dewey. Eng & Min J 99:355 S F 20 '15  
Assaying gold bearing cyanide solutions. L. M. Levy and H. Jones. Eng & Min J 100:150 Ji 24 '15  
Determination of platinum, palladium and gold. A. M. Smeed. Eng & Min J 99:799 J Ap 17 '15  
Electrolytic assay of lead. E. A. Lewis. Metal Ind n 7 12:463 N '15  
Efficiency of roasting for assaying. L. I. Hall. Eng & Min J 100:619 O 16 '15  
New assay balance. II Met & Chem Eng 13: 612-13 Ag '15  
Phosphate method for aluminum. F. J. Hawley. Eng & Min J 99:636 7 Mr 20 '15  
Quantitative blowpipe as an aid to the spectroscopist. B. Fletcher, jr. diags Met & Chem Eng 12:683 S 771 O N 11 '15  
Rule governing combustion losses. W. J. Shurwood. Am Inst Min 15 Bul 101 10:11 S Ag '15; Excerpta. Met & Chem Eng 4:422 15 J '15; Discussion. Am Inst Min 15 Bul 100 2164 D '15

See also Gold assaying, Metallurgy

**Assembling methods**

Assembling motor cars in Packard plant. II Iron Age 90:875-6 O 14 '15  
Having assembly carts. A. A. Bond. Iron Age 90:236 Ja 28 '15

**Assessment**

Method of assessing cost of water main extension by the municipally owned water works of Duluth, Minn. D. A. Reed. Eng & Contr 42:447-8 My 12 '15

**Assessment—Continued**

Table for making assessments for paving.  
D. B. Davis. Eng & Contr 43:447 My 19 '15

**Associated advertising clubs of the world**  
11th annual convention, Chicago, June 20-25.  
J. T. Elliott. Inland Ptr 55:546-7 J1 '15

**Associated engineering societies of St. Louis**  
Regulations. Assn Eng Soc J 54:228-33 My '15  
Review. A. P. Greensfelder. Assn Eng Soc J  
54:320-7 My '15

**Associated garages of America**  
Garage men form national body. Horseless  
Age 35:198 F 10 '15

**Associated manufacturers of electrical supplies**  
Organization. Elec R & W Elec'n 66:430 Mr  
13 '15

Supply manufacturers organize. Elec W 65:  
693-4 Mr 13 '15

**Associated press**

Mobilizing news. C: M. Crane. Il Sci Am 112:  
134-5 F 6 '15

**Association and associations**

Commercial organizations in France. A. J.  
Wolfe. U S Bur For & Dom Com 98:1-75 '15  
Local association as an educator. Dom Eng  
71:128-9 My 1 '15

See also Chambers of commerce; Engi-  
neering societies

**Association buildings**

Young women's Hebrew association, New  
York. Il Arch & Bldg 47:21-5 Ja '15

**Association of Edison illuminating companies**  
36th annual convention, Spring Lake, N. J.,  
Sept. 13-16. Elec W 66:622-3 S 18 '15

**Association of iron and steel electrical engineers**  
9th annual convention, Detroit, Mich., Sept.  
8-11. Elec R & W Elec'n 67:521-4 S 18 '15  
9th annual convention, Detroit, Mich., Sept.  
8-11. Elec W 66:624 S 18 '15  
9th annual convention, Detroit, Mich., Sept.  
8-11. Iron Tr R 67:539-41 S 18 '15

**Association of railway electrical engineers**

8th annual convention, Chicago, Oct. 19-22.  
Ry Age 59:802-4 O 29 '15  
8th annual convention, Chicago, Oct. 19-22.  
Ry R 67:529-30 O 23 '15

**Association of railway telegraph superintend-  
ents**

34th annual convention, Rochester, N. Y., June  
22-24. Ry Age 59:19-20 J1 2 '15

**Association of transportation and car account-  
ing officers**

Meeting at Richmond, Va., Dec. 8 and 9, 1914.  
Ry Age 57:1192 D 25 '14  
Summer meeting, Niagara Falls, June 22-23.  
Ry Age 59:25-6 J1 2 '15

**Astoria tunnel**

Astoria-bronx gas tunnel. J. R. Springer. Il  
Mine J 39:649-50 O 28 '15

Astoria tunnel under the East river for gas  
distribution in New York city. J: V. Davies.  
Il map Am Gas Light J 103:225-30, 244-7-  
O 11-18 '15

Flooding and recovery of the Astoria tunnel.  
H. Carpenter. Il diggs Eng N 74:673-8, 736-  
41 O 7-14 '15

**Astrolabe**

Prismatic astrolabe; a new instrument for  
determining latitude and time by equal alti-  
tudes. I: Hines. Il Eng N 72:764-5 O 8 '14;  
Same. Sci Am S 78:375 D 12 '14

**Astronomical instruments**

Watching the earth revolve. A. H. Compton.  
Il Sci Am S 79:196-7 Mr 27 '15

See also Astrolabe; Telescope

**Astronomical observatories**

Paris observatory and its work. G: A. Hill.  
Il Sci Am 112:261-4 Mr 13 '15

**Astronomical research**

Where the mathematician could aid the  
astronomer. F. Schlesinger. Sci Am S 80:31-2  
J1 10 '15

**Astronomy**

Measurement of the distances of the stars.  
E. W. Byron. Sci Am S 80:162-3, 182 S 11-  
18 '15

Recent discoveries in astronomy. Sci Am S  
80:210 O 2 '15

Sidereal universe. J. S. Plaskett. Sci Am S  
80:274-5, 299 O 30-N 6 '15

See also Astronomical instruments; Astro-  
nomical observatories; Mechanics, Celestial;  
Meteorites; Stars

**Study and teaching**

Celestial globe and tellurian. Il Sci Am 113:  
61 J1 17 '15

**Atchison, Topeka & Santa Fe railroad**

Mr. Hopley and the Santa Fe family. G. La-  
throp. Ry R 57:584-5 N 6 '15  
Nineteen years' development work on the  
Santa Fe. map Ry Age 58:1403-6, 1465-8 Je  
18-25 '15

Old and the new Santa Fe. C: S. Gleed. Ry R  
57:580-2 N 6 '15

Reorganization of the Santa Fe. V: Morawetz.  
Ry Age 59:849-50 N 5 '15

Twentieth annual report. map Ry Age 59:680-  
1, 716-18 O 15 '15

**Atlanta, Georgia****Sewerage**

Operating records of Atlanta sewage treat-  
ment plant show adequate degree of puri-  
fication. C: C. Hemmon. Il Eng Rec 72:4-7  
J1 3 '15

**Atlantic cable. See Cables, Submarine****Atlantic City, New Jersey****Hotels**

Cold weather construction methods used in  
erecting Hotel Traymore. I: L. Kneeder.  
Il diggs Concrete Con 7:172-4 N '15

Largest fireproof resort hotel in the world  
completed at Atlantic City. Il diggs Eng Rec  
72:11-13 J1 3 '15

New Traymore hotel at Atlantic City. Il diggs  
Eng N 74:118-23 J1 1 '15

Reinforced-concrete frame of hotel Traymore  
erected at rate of a floor a week. Il plans  
Eng Rec 72:50-1 J1 10 '15

**Atmosphere**

Formation of ozone in the upper atmosphere.  
J. N. Pring. Sci Am S 79:286-7, 303 My 1-8 '15  
Measuring atmospheric comfort. Il Sci Am  
112:431 My 8 '15

See also Air

**Atmospheric pressure**

Barometer and health. Sci Am 112:380 Ap 24  
'15

**Atmospheric temperature**

Highest and lowest temperatures in the atmos-  
phere. Sci Am 112:49 Jan 9 '15  
Man's true thermal environment. G. W. Grah-  
am. Sci Am S 80:219 O 2 '15

**Atomic theory**

Some aspects of the atomic theory. F: Soddy.  
Sci Am S 80:174-9 S 18 '15

See also Atoms

**Atomic weights**

Annual report of the International committee  
on atomic weights, 1915. E. W. Clarke and  
others. Am Chem Soc J 38:1585-9 Ag '14

Annual report of the International committee  
on atomic weights, 1916. Am Chem Soc J  
37:2449-52 N '15

Atomic weight of cadmium. G. A. Hulst and  
E. L. Quinn. Am Chem Soc J 37:1997-2000 S  
'15

Atomic weight of molybdenum. J: H. Miller.  
Il diggs Am Chem Soc J 37:2046-44 S '15

Atomic weight of tantalum. G: W. Sears and  
C. W. Hulke. Il diggs Am Chem Soc J 37:  
833-44 Ap '15

Atomic weights of lead. Sci Am 111:469 D 5  
'14

Elements with several atomic weights. Sci Am  
S 80:39 J1 17 '15

Molecular weight of sodium carbonate and the  
atomic weight of carbon referred to silver  
and bromine. T. W. Richards and C: R.  
Hoover. Am Chem Soc J 37:96-107 Ja '16

Molecular weight of sodium sulfate and the  
atomic weight of sulfur. T. W: Richards and  
C: R. Hoover. Am Chem Soc J 37:108-13 Ja  
'16

Notes on sodium columbite; the atomic  
weight of columbium. E. F. Smith and W. K.  
Van Hugen. Il diggs Am Chem Soc J 37:1783-  
97 Ag '15

**Atomic weights—Continued**

- Periodic law. S. Dushman. Gen Elec R 18: 614-21 J 15  
 Revision of the atomic weight of cadmium: the electrolytic determination of cadmium in cadmium chloride. G. P. Baxter and M. L. Hartmann. Am Chem Soc J 37:113-31 Ja '15  
 Revision of the atomic weight of lead: the analysis of lead bromide. G. P. Baxter and T. Thorvaldson. Am Chem Soc J 37:1020-7 My '15  
 Revision of the atomic weight of lead: the analysis of lead bromide and chloride. G. P. Baxter and F. L. Grover. Il Am Chem Soc J 37:1027-61 My '15  
 Revision of the atomic weight of praseodymium: the analysis of praseodymium chloride. G. P. Baxter and G. J. Stewart. Am Chem Soc J 37:516-36 Mr '15  
 Same chemical element may have different atomic weights. Sci Am 112:313 Ap 3 '15  
 22d annual report of committee on atomic weights; determinations published during 1914. G. P. Baxter. Am Chem Soc J 37: 407-17 Mr '15  
 Weights of elements. J. Waddell. Sci Am S 80:290-1 N 5 '15

**Atomizers**

- Index drilling and tapping attachment for Brown & Sharpe automatic screw machine. W. F. Gradolph. Il diag Mach 21:289-90 D '14

**Atoms**

- Atoms and ions. J. J. Thomson. Sci Am S 79:274, 280-1, 310-11, 326-7, 340-7, 362-3 My 1-Je 5 '15  
 Atoms, molecules and electrons. N. W. Rakestraw. Sci Am S 80:254-6 O 16 '15  
 Changes of mass and weight involved in the formation of complex atoms. W. D. Harkins and E. D. Wilson. Am Chem Soc J 37: 1367-83 Je '15  
 Chemical significance of crystalline form. W. Barlow and W. J. Pope. Il Am Chem Soc J 36:1676-86 Ag '14  
 Modern views on the constitution of the atom. A. S. Eve. Il J Fr Inst 179:269-82 Mr '15  
 Present aspect of the hypothesis of compressible atoms. T. W. Richards. Bibliog Am Chem Soc J 36:247-39 D '14  
 Recent evidence for the existence of the nucleus atom. A. D. Cole. Sci Am S 79:194-6 Mr 27 '15  
 Recent work on the structure of the atom. W. D. Harkins and E. D. Wilson. Bibliog Am Chem Soc J 37:1396 1121 Je '15  
 Remarks concerning the chemical significance of crystalline form. T. W. Richards. Am Chem Soc J 36:1686-95 Ag '14  
 Structure of complex atoms: the hydrogen-helium system. W. D. Harkins and E. D. Wilson. Am Chem Soc J 37:1383 96 Je '15  
 What is matter made of? resemblance of the atom structure to an infinitely small solar system. A. H. Compton. diag Sci Am 112: 451-2 My 16 '15

See also Atomic weights; Electrons

- Atterberg** plasticity method. C. S. Kinnison. U S Bur Stand Tech Pa 46:1-18 '15

**Audion**

- Audion telephone repeater. F. M. Williamson. Elec W 65:900 Ap 10 '15  
 Developments of the audion lamp made from light. Elec R & W Elec'n 67:908 9 N 13 '15  
 Device for receiving wireless time signals. Il diag Elec W 65:818-19 Mr 27 '15  
 Double-audion type of receiver, description of the equipment used for the reception of continuous radiotelegraphic waves at station in North Dakota. A. H. Taylor. Elec W 65:862-5 Mr 13 '15  
 First public use of the de Forest lamp as an oscillating audion. L. de Forest. Il Elec R & W Elec'n 67:908 N 13 '15  
 Operating features of the audion: explanation of its action as an amplifier, as a detector of high-frequency oscillations and as a valve. H. H. Armstrong. diag Elec W 64:149-52 D 12 '14  
 Ultraudion detector for undamped waves. L. de Forest. Il Elec R & W Elec'n 66:257-8 F 20 '15; Same. Elec W 65:165-6 F 20 '15

**Auditing**

- Competitive bidding. J Account 29:81-90, 133-6 Ag '15  
 Qualifications in certificates. C. O. May. J Account 29:248-59 O '15  
 Value of an audited statement. A. G. Moss. J Account 18:455-9 D '14

See also Accounting

**Auditoriums**

- Acoustics of auditoriums; investigation of the acoustical properties of the armory at the University of Illinois. E. R. Watson. Bibliog Il Il C Eng Exp Sta Bul 73:1-32 '14; Same. Sci Am S 78:358 9, 380 2 D 5 12 '14  
 Acoustics of auditoriums; investigation of the acoustical properties of the armory at the University of Illinois. E. R. Watson. Il Brickh 21:237 x O '14  
 Project for large municipal convention hall in Chicago. Il map Ry R 36 100 1 Ja 16 '15  
 San Francisco's new expedition club auditorium. Il Elec W 65:313 Ja 30 '15  
 Ventilation and other features of expedition auditorium at San Francisco. Il Eng Rec 71:237-8 F 20 '15

See also Balconies

**Augers**

- Facts about augers and auger bits. E. H. Purville. Indig Age 37:67 8 Ag '15

**Austin, Texas****Public works**

- Hollow reinforced-concrete structure rebuilds dam at Austin, which failed fifteen years ago. Il Eng Rec 11:672-3, 707 9, 750 1 Ma '15  
 Je 12 '15  
 Hydroelectric development at Austin. Il diag Elec W 65:160 " Je 3 '15  
 New Austin dam and power plant. E. S. Taylor. Il Eng & Contr 43 165 1, 192 1, 215 6 Ma 26-Je 2, 16 '15; Same cont. Elec R & W Elec'n 66:239 15 Ma 7 '15  
 Power development at the Austin dam. F. H. Taylor. Il diag plan Eng 11:1171 6 Je 10 '15  
 Reconstruction of Austin, Tex., reservoir dam. F. S. Taylor. Il diag Eng S 11 1069 93 Je 3 '15  
 Question about the Austin, Tex., dam. J. D. Austin. F. H. Taylor. Elec R & W Elec'n 66:239 15 Ma 7 '15

**Australia**

See also Mines and mineral resources; Australia

**Commerce**

- American goods for Australia. J. P. Beaz. Metal Work 33:34 Mr 3 '15

**Commercial policy**

- Australia anti-dumping law. Iron Age 96:887 O 14 '15

**Industries and resources**

- Australian metal contracts. L. H. Quinn. Iron Age 96:1029 1 " 1 '15  
 Western Australian goldfields. How water supply can be improved. L. H. Quinn. Iron Age 96:1029 1 " 1 '15

**Austria-Hungary****Industries and resources**

- Chemical industries of Austria-Hungary and the war. Abstract. E. L. Smith and G. Ulrich. Met & Chem Eng 11:239 40 2 15 '15  
 Bohemian steel works. A. Harkins. Iron Age 96:1016 15 1 '15

**Navy**

- Austrian submarines. Il Sci Am 114:20 3 14 '15  
 Submarine for the Austro-Hungarian navy. F. C. Coleman. Il Sci Am 112:65 30 3 '15

**Authorship**

- Writing technical articles. H. P. Owens. Am Chem Light J 162 1 7 Ja 1 '15

See also Journalism

- Auto-buses.** See Buses; Buses, Motor buses

- Autoclave test.** See Cement testing

- Automatic machinery.** See Machinery, Automatic

**Automobile accidents**

Investigating and handling automobile accidents. J: S. Mills. Elec Ry J 45:1203-4 Je 26 '15

Prevention of motor-vehicle accidents. S: B. Hare. Elec Ry J 46:312-13 O 16 '15

**Automobile brakes.** See Brakes, Automobile

**Automobile costumes**

Fashion hints for winter wear for women. II Automobile 31:1014-16 D 3 '14

**Automobile driving**

Left-hand vs. right-hand drive. C. C. Blackmore. Sci Am 112:83 Ja 23 '15

Left hand vs. right hand drive. O. B. Potter. Sci Am 112:309 Ap 3 '15

**Automobile engineering**

Automobile engineering curricula at the University of Michigan. W. T. Fishleigh. Horseless Age 35:111-14 Ja 20 '15

**Automobile engines**

Able engine—sheet steel for motor parts. II diag Automobile 32:594-5 Ap 1 '15

Adjustable V-motor connecting rod big ends. II diag Horseless Age 36:40 Jl 14 '15

Aluminum pistons for racing and high-speed work—connecting-rod stresses complex—four valves per cylinder. C: Vivier. Automobile 33:706-7 O 14 '15

American-built motors of recent design compare favorably with European products. C. S. Ricker. II Automobile 33:100-7 Jl 15 '15

America's engineering triumph at the Sheephead Bay speedway. A. L. Clayden. II Automobile 33:698-8 O 14 '15

America's smallest Knight the new Moline. II Automobile 32:225 F 4 '15

Art in high-speed motor design. W. B. Stout. Automobile 33:308-9 S 30 '15

Balanced intake in rotary motor. II diag Automobile 31:1156-7 D 24 '14

Barthel six-cylinder motor. diag Horseless Age 35:148 Ja 27 '15

Bellam and Bréguas automobile engine. diag Am Soc M 10 J 37:287 My '15

Block castings, with table of motor characteristics in the different price classifications for the past 5 years. Automobile 31:1194-8 D 31 '14

Bourneville rotary valve motor. diag Horseless Age 34:916 D 25 '14

Briscoe eight and four in same chassis. II diag Automobile 33:151-5 Jl 22 '15

Buda eight-cylinder engine. II Horseless Age 35:172 F 3 '15

Capacity of eight-cylinder motors in cubic inches calculated for bores between 2½ and 6 inches, with strokes from 2½ to 6½ inches. Automobile 32:265 F 11 '15

Car vibration and engine unbalanced forces. L. R. French. Horseless Age 36:52-5 Jl 14 '15

Chalmers valve-in-head motor. II diag Automobile 33:144-7 Jl 22 '15

Chart for determining brake mean effective pressure. Horseless Age 36:370 O 15 '15

Cole introduces eight-cylinder model. II Horseless Age 35:95-6 Ja 20 '15

Compression ratio at high altitudes. Horseless Age 35:816 Je 16 '15

Connecting-rod design for V motors. C. S. Ricker. Automobile 33:234-5 J. Ag 5 '15

Continental light six motor announced. II Automobile 32:1130 Je 24 '15

Continuous carbon remover. Automobile 32:162 Ja 21 '15

Cylinder number; separate cylinder heads. II diag Horseless Age 34:938-40 D 30 '14

Davis eight uses two camshafts. II Automobile 32:183-4 Ja 28 '15

Discussion on eight cylinder motors at S. A. 16. Indiana meeting. Horseless Age 35:282-4 F 24 '15

Dorris six original design. II diag Automobile 32:636-8 Ap 8 '15

Duesenberg double oiling system. II Automobile 32:272 F 11 '15

Duesenberg 1915 motor. II Horseless Age 35:503 Ap 14 '15

Eight-cylinder engine. II: C. Chintain. II diag Automobile 32:87-9 Ja 14 '15

Empire engineer thinks sixes good for all cars up to 2000 lbs. L: Schweitzer. Automobile 33:652 O 7 '15

Enger twelve with individual valve cams. II diag Automobile 33:603-4 S 30 '15

Engine for Dennis brothers' subsidy motor lorry; plan. Engineer 119:sup Ja 18 '15

Engine power at high altitudes. Horseless Age 36:24 Jl 7 '15

European high-efficiency motors. S. Gerster. diag Automobile 32:667-9, 710-11+, 752-5 Ap 15-20 '15

Factors in valve-in-head design. W. A. Brush. diag Automobile 33:320-2 Ag 19 '15

Fallacy in twelve argument. D: Fergusson. Automobile 33:792 O 28 '15

Ferro eight-cylinder V-type engine. II diag Horseless Age 35:97-8 Ja 20 '15

Four cylinders and their future. A. L. Clayden. Automobile 32:28-9 Jl 1 '15

Friction horse power of motors. S. R. Thomas. Horseless Age 35:217 F 10 '15; Abstract. Ind Eng 15:560 F '15

Fundamental problems of engine design; with discussion. A. P. Brush. Automobile 32:1106-9, 1145-6 Ja 24 '15; Abstract. Am Soc M 10 J 37:563-3 S '15

Governors for motor vehicles. T. Douglas. diag Automobile 33:942-5 My 27 '15

Harding connecting-rod under tension; two-cycle English design has double truncated pistons. diag Automobile 32:906 My 30 '15

Herrmann eight uses splash oiling. diag Automobile 33:758-9 Ap 29 '15

Herschell-Spittman eight-cylinder motor. Automobile 33:80-1 Ja 14 '15

High speed automobile motor. C: F. Barrett. II Sci Am 112:11-14 Ja 3 '15

High-speed engines. D. M. White. Sci Am S 79:411 Je 26 '15

High speed, high efficiency motors. H: G. Ingram. Horseless Age 35:38-40 Ja 6 '15

History of the twelve-cylinder motor. W. W. Walford. II Automobile 32:500-1 Mr 18 '15

Holler eight cleverly designed. II Automobile 32:857-9 My 13 '15

How and why of the V-type motor. J: S. Harwhite. II Sci Am 113:20-14 J1 3 '15

How many cylinders? A. L. Clayden. diag Automobile 32:888-91 My 20 '15

How many cylinders? J. G. Vincent. Eng M 49:930 S '15

Hupmobile—larger motor in 1916. II diag Automobile 32:982-3 Ja 3 '15

Inertia forces in twelve-cylinder motors. D. Fergusson. Horseless Age 36:367 O 15 '15

Jenks eight-cylinder motor. II Horseless Age 35:173 F 3 '15

Knight racing motor. diag Automobile 32:291 F 11 '15

Light pistons make smooth motor. W. W. Walford. diag Automobile 32:363-3 F 25 '15

Locomobile refines both sixes. II diag Automobile 32:1072-3 J. Je 17 '15

Lower weight, higher efficiency. A. L. Clayden. Automobile 33:553 S 23 '15

Lozier introduces the 11-A-12 twelve. II Horseless Age 35:873 Je 30 '15

Marmon features continued for 1916. II diag Automobile 32:12-15 Jl 1 '15

Mathematics of motor flywheel explained. Automobile 33:466-7 S 9 '15

Mean effective pressure and piston speed. charta Horseless Age 36:229-31 S 1 '15

Medanich motor has balanced exhaust. diag Automobile 33:208 Jl 29 '15

Metropolitan S. A. 16. discusses aeroplanes and governors. diag Automobile 33:560-3 S 23 '15

Monarch adds eight-cylinder model; Herschell-Spittman motor interchangeable with Continental six in same chassis. II diag Automobile 32:492-3 Mr 18 '15

Motor speeds at 10 m. p. h. Automobile 31:1115-16 D 17 '14

Multiplex-cylinder motors. Sci Am 113:205 S 4 '15

National highway twelve. II diag Automobile 33:326-7 Ag 19 '15

New motors from an efficiency viewpoint: a comparison of I. head, T. head and I. head motors with respect to power output, weight and fuel consumption. V. I. Moneroff. Horseless Age 35:182-4 F 3 '15

New York and Detroit engineers discuss eight-cylinder engines. Horseless Age 34:824-7 D 2 '14



**Automobile engines—Ignition devices—Cont.**

- Magneto and coil ignition. P. M. Heldt. *diag* Horseless Age 35:178-81 F 3 '15  
 Magneto spark vs. battery-coil spark. D. H. Cunningham. *Automobile* 31:1020-3 D 3 '14  
 Magneto vs. battery coil—from automobile drivers' viewpoint. C. S. Manierre. *Automobile* 32:20-1 Ja 7 '15  
 New principle in motor car ignition. *diag* Horseless Age 35:186-7 Ag 15 '15  
 Reasons for advancing spark lever. *Automobile* 31:1162 D 24 '14  
 Single spark and similar interrupters. P. M. Heldt. *diag* Horseless Age 35:150-2 Ja 27 '15  
 Spark advance should be function of flame propagation. F. L. Hoyt. *Automobile* 32:408-9 Mr 4 '15  
 Spark plug. P. M. Heldt. *diag* Horseless Age 34:918-20 D 23 '14  
 Spark timing methods. P. M. Heldt. *diag* Horseless Age 35:274-7 F 24 '15  
 Systems of electric ignition defined. *Automobile* 32:589 Ap 1 '15  
 Two-point ignition. P. M. Heldt. *diag* Horseless Age 35:314-6 Mr 10 '15  
 Wiring of Bosch duplex system. *diag* Horseless Age 34:909 D 30 '14  
*See also* Automobiles Electric equipment; Magnetos

**Lubrication**

- Automobile lubrication. C. W. Stratford. *diag* Sci Am 8 79:393-3, 412-14 F 19-20 '15; Same. *Horseless Age* 35:879-81; 36:10-19 Jo 30-J1 7 '15  
 Exhaust heat cuts oil film. G. S. Bryan. *Automobile* 32:516-9 Mr 25 '15  
 Low-test, easily-vaporized oil: objections. C. E. Duryea. *Automobile* 32:758 Ap 29 '15  
 Lubricating system for R. N. motors made in Belgium. *diag* *Automobile* 32:159-60 Ja 21 '15  
 Lubrication of old model Pope-Hartford. *diag* *Automobile* 32:126-7 Jo 24 '15  
 Properties of lubricating oils. O. J. May. *Horseless Age* 35:338 Mr 10 '15  
 Splash oiling for lights. *diag* *Automobile* 32:408-9 Mr 11 '15  
 Splash oiling for stop piston motor. *diag* *Automobile* 32:947 My 27 '15

**Manufacture**

- Adoption of aluminum pistons. W. M. Layett. *Automobile* 33:421 f 8 2 '15  
 Advantages of sand-cast pistons. W. M. Layett. *Automobile* 33:878-9 N 11 '15  
 Aluminum alloy piston. J. E. Diamond. *diag* *Automobile* 33:551-2 8 23 '15  
 Aluminum alloy pistons. E. Gruenwald. *Horseless Age* 35:806 f 16 '15  
 Aluminum construction advantages. W. B. Stout. *Automobile* 33:463 8 9 '15  
 Aluminum or iron crank cases: a comparison of the two materials on the basis of weight, strength and cost. V. I. Monerloff. *Horseless Age* 35:582-3 Ap 28 '15  
 Aluminum piston critics answered. J. Leopold and J. E. Diamond. *Automobile* 33:744-5 O 21 '15  
 Aluminum piston will never prove success in truly high-duty motor. E. R. Porter. *Automobile* 33:420-f 8 2 '15  
 Aluminum pistons. *Horseless Age* 35:326 O 1 '15  
 Aluminum pistons pass unchallenged. *Automobile* 32:1116-17 Jo 24 '15  
 Aluminum versus steel in motor construction. J. E. Diamond. *Automobile* 33:508 9 8 16 '15  
 American alloys best. J. Leopold. *Automobile* 33:909 N 25 '15  
 Analyzing heat flow: use of aluminum for automobile motor construction. E. H. Sherbondy. *Automobile* 32:834-5 N 4 '15  
 Early days of aluminum pistons. J. Leopold. *Automobile* 33:650-f O 7 '15  
 How to make automobile engine castings. *diag* *Foundry* 43:291-4 Ag '15  
 Molding the new Cadillac eight-cylinder motor. H. C. Battey. *diag* *Foundry* 43:171-4 My '15

- Overcoming the slap of aluminum pistons. P. M. Heldt. *Horseless Age* 35:327-8 8 1 '15  
 Piston practice; present day design with special reference to aluminum alloy. J. E. Diamond. *diag* *Automobile* 33:871-7 N 11 '15; Discussion. 33:931-4 N 18 '15  
 Possible troubles with aluminum motor. A. L. Clayden and others. *diag* *Automobile* 33:275-7 Ag 12 '15  
 Prefers iron or steel to aluminum. E. H. Sherbondy. *Automobile* 33:651-2 O 7 '15

**Overheating**

- Causes of overheating briefly outlined. *Automobile* 32:324-5 F 18 '15

**Repair**

- Back holds any motor in 32 positions. *diag* *Automobile* 32:430 Mr 4 '15  
 V-type lights in the repair shop. *Horseless Age* 35:91-2 Ja 20 '15

**Terminology**

- Definite new unit for motor speeds to avoid vague high and low. *Automobile* 32:1082 Jo 17 '15

**Testing**

- Ferro eight makes 300-hr. test. *diag* *Automobile* 33:566-7 8 23 '15  
 Friction horse power of motors: tests to determine their variation with change in water jacket temperature. *Horseless Age* 35:217 F 10 '15  
 Use of optical indicators for checking defects in functioning of motors. *diag* *Automobile* 33:976-9, 1018-19 N 25-D 2 '15

**Valves**

- Appel is novel valve-driving mechanism. *diag* *Automobile* 32:163-3 Ji 22 '15  
 Calculating motion of sleeve valves. *Horseless Age* 35:269-70 8 15 '15  
 Negative lap gains in valve timing. *Automobile* 31:1267-8 D 31 '14  
 New positive and silent valve operating mechanism. *diag* *Horseless Age* 35:112-13 Ji 28 '15  
 Overhead valves in theory and practice. A. L. Clayden. *Automobile* 32:618-19 Ap 8 '15  
 Rotary valve makes slow progress. *diag* *Automobile* 32:595 Ap 1 '15  
 Rotary valve motors. *Automobile* 33:285 Ag 12 '15  
 Rotary valve progress. *diag* *Horseless Age* 35:249 F 17 '15  
 Single, balanced, inlet and exhaust valve. J. B. Roots. *diag* *Horseless Age* 35:376 Mr 17 '15  
 Timing valves by the flywheel. *Automobile* 32:512-13 8 16 '15  
 Valve timing of American motors: tabulation. *Automobile* 31:1268-9 D 31 '14  
 Valve types. *diag* *Horseless Age* 31:940 D 30 '11  
 Walker motor uses cored rotary sleeve. *diag* *Automobile* 32:728 Ap 22 '15

**Automobile factories**

- Car, truck and accessory plants expand. *diag* *Automobile* 31:1151-3 D 21 '14  
 Detroit plants make \$5,000,000 additions. *diag* *Automobile* 33:324-5 Ag 19 '15  
 Directory of automobile makers. *Automobile* 31:1267-3 D 31 '14  
 Flint second city of automobile industry. L. V. Spencer. *diag* *Automobile* 32:569-76 Ap 1 '15  
 How Dodge brothers plant was reorganized. H. C. Battey. *diag* *Iron Tr R* 56:909 16 My 6 '15  
 Rehabilitation of existing plants as a factor in production costs. H. V. Coes. *plans Eng* M 49:363-8 Jo '16  
 Solving the spare problem: the Maxwell company's Newcastile plant. *diag* *Automobile* 32:316-20 F 18 '15  
 Stamping plant for quantity production. F. L. Prentiss. *diag* *Iron Age* 95:489-94 Mr 4 '15  
 \$25,000,000 for new buildings and equipment. *diag* *Horseless Age* 35:258-9 8 15 '15  
 Unique conveyor in automobile plant. *diag* *Iron Age* 95:566-8 8 9 '15



**Automobile factories—Continued**

War rushes French plants; automobile factories working 24 hours a day on ammunition, aeroplane and military supplies. W. F. Bradley. *Il Automobile* 32:1013-16; *Jr* 10 '15

See also Automobiles—Manufacture; also Ford motor company

Automobile fans. See Automobiles—Fans

Automobile headlights. See Automobiles—Lighting

**Automobile horns**

Automobile warning signals. A. L. McMurry. *diagm Eng M* 48:602-5 *Jl* '15  
Dies for drawing flanged shells. H. P. Davis. *diagm Mach* 21:532-4 *Mr* '15  
Johns-Manville co. announce new motor, hand and vibrator horns. *Il Horseless Age* 34:973 *D* 30 '14

**Automobile industry and trade**

Are you selling cars or buying them? *Horseless Age* 34:901-2 *D* 23 '14  
Automobile chronology for 1914. *Automobile* 31:1154-5 *D* 24 '14

Certified tests by dealers as sales helps. *Horseless Age* 35:597-8 *My* 5 '15

Educating the dealer's mechanic. A. L. Horn. *Horseless Age* 35:641 *My* 12 '15

Forces at work during 1914—the year review. *Automobile* 31:1143-6 *D* 24 '14

Influence of the war on the automobile industry. H. W. Perry. *Il Sci Am* 113:206-8 *S* 4 '15

Interesting facts about the automobile business. G. B. Griffin. *Elec R & W Elec'n* 67:338 *Ag* 21 '15

Makers cannot maintain prices through contracts with dealers. *Automobile* 31:1085 *D* 10 '14

Metropolitan S. A. R. discusses effects of war. *Horseless Age* 35:185-6 *F* 3 '15

What the motor car does for other industries. G. B. Griffin. *Horseless Age* 36:187 *Ag* 15 '16

See also Automobile factories; Automobile service stations; Electric vehicle industry; Garages; Motor truck industry; also Ford motor company

**Accounting**

Should dealers' parts accounts be standardized? A. H. Romsen. *Il Horseless Age* 36:69 *Jl* 21 '15

**Service**

What constitutes service to the owner? C. Gould. *Horseless Age* 36:90-1 *Jl* 21 '15

See also Automobile service stations

**Australia**

American-made chassis sold in Australian trade. *Automobile* 32:818 *My* 6 '15

New South Wales 1914 imports \$2,893,830. *Automobile* 32:531 *Mr* 25 '15

**Belgium**

Belgian car factories intact. W. F. Bradley. *Il map Automobile* 32:39-101 *Ja* 21 '15

**Canada**

Business gain in western Canada. A. C. Emmett. *Automobile* 31:1112-13 *D* 17 '14

**Ceylon**

British India. *U S Sp Cons Rep* 72:574-AM '15

**France**

Americans speed up French factories. W. F. Bradley. *Il Automobile* 32:450-1 *Mr* 11 '15

British duty threatens French exports. *Il Automobile* 33:734-5 *O* 21 '16

French automobile industry in good condition. *Il Automobile* 32:101-3 *Ja* 21 '15

**Germany**

Germany's export trade; how the 1913 foreign business of \$80,000,000 was distributed. M. Braun. *Automobile* 31:1009-12; *Jl* 3 '14

**Great Britain**

Analysis of automobile industry in Great Britain during war. *Automobile* 32:38-9 *Jl* 1 '15  
Great Britain again our largest buyer. *Automobile* 32:736-7 *Ag* 23 '15

War stops Olympia, but not car development. J. E. Schipper. *diagm Automobile* 31:1036-7 *D* 10 '14

**India**

British India. *U S Sp Cons Rep* 72:191-201 '15  
U. S. motor cars gain prestige in India. *Horseless Age* 35:490 *Ap* 14 '15

**Tasmania**

Automobile trade in Tasmania. *Horseless Age* 35:184 *F* 3 '15

**United States**

Car and truck sales in Southwest gain 61.2% in 3 months. *Automobile* 32:576-8 *Ap* 1 '15  
Colorado 1915 motor car registration by make. H. G. Hedden. *Automobile* 33:172-3 *Jl* 22 '16

Detailed export statistics show that U. S. dominates automobile world. *Automobile* 33:624-5 *S* 30 '15

Directory of automobile makers. *Automobile* 31:1262-3 *D* 31 '14

Distribution of motor car exports for the past fiscal year. *Horseless Age* 36:241 *S* 1 '15

Exports for 10 months ending October total \$21,241,860. *Automobile* 31:1129 *D* 17 '14

Exports of 1913-14 exceeded forty millions. *tabulation, Horseless Age* 34:391-3 *Ag* 26 '14

Exports take another jump. *Horseless Age* 36:170 *Ag* 15 '15

Farmers of Southwest could buy 91,000 cars at \$1,000 each. *map Automobile* 32:106-7 *Mr* 1 '15

50,000 cars for Iowa in 1915. C. G. Shambaugh. *Automobile* 32:490-1 *Mr* 18 '15

Gaining the summit of American industries. *Horseless Age* 36:201 *S* 15 '15

History of the American automobile industry. H. Becroft. *Automobile* 31:776-8, 836-7, 880-1, 932-3 *O* 25-8 *N* 15 '16

Kansas City a great distributing center. H. Becroft. *Automobile* 32:336-7 *F* 15 '15

Michigan's six month's redistribution. M. Braun. *Automobile* 32:504-5 *S* 16 '15

Middle west crops promise increased car sales. *map Automobile* 33:497-9 *Jl* 19 '16

More than 1,800,000 cars registered in U. S. *Horseless Age* 36:4 *Ja* 6 '15

Motor vehicle registrations and revenues, 1914. *Horseless Age* 35:629 *My* 6 '15

Motor vehicles in the United States. *Month* 3 38:657 *My* 13 '15

New England sales 45,063 cars in 2 years. J. T. Sullivan. *Automobile* 32:200-1 *Mr* 1 '15

New England will spend \$36,000,000 for cars and accessories. J. E. Schipper. *map Automobile* 32:333-41 *Mr* 11 '15

Northwest farmers offer car market. *Automobile* 32:270-1 *F* 11 '15

Omaha distributor for the year held H. Becroft. *Automobile* 32:355-6 *F* 26 '15

Rhode Island's registration analyzed. *Automobile* 33:836 *N* 11 '15

2,070,903 cars in United States. H. M. Fay. *map Automobile* 32:271-4 *Ag* 12 '15

261,500 cars have electric systems. *other statistics, Automobile* 33:132 *Ag* 19 '15

United States has 1,244,600 cars. H. M. Fay. *map Automobile* 32:265-7 *Mr* 26 '15

Unprecedented year for Studebaker corporation. *Horseless Age* 35:392-90 *Mr* 2 '15

**Automobile lamps. See Automobile Lighting****Automobile laws and regulations**

Car should carry ownership guarantee. L. A. Ward. *Automobile* 32:670-1 *Ag* 1 '15

Motor car laws of all the states. *tabulation, Horseless Age* 36:216 *Ag* 1 '15

Why local regulations of motor truck traffic are objectionable. *Horseless Age* 35:407-2 *Mr* 24 '15

Yellowstone park automobile regulations now in effect. *Eng Rec* 72:172 *Ag* 7 '15

**Automobile mufflers**

Automobile muffler losses experimentally determined. *diagm Horseless Age* 35:612 *Ag* 15 '15

Exhaust silencer operating on principle of neutralizing sounds. *diag Elec M* 60:799-1 *O* 30 '15

Striking an automobile muffler head. F. L. Prentiss. *Il Iron Age* 94:971-2 *O* 26 '15

**Automobile number plates**

New York state to use new style of automobile number plate. *Il Const Record* 10:10257 *O* 30 '15

**Automobile parts**

- Should dealers' parts accounts be standardized? A. H. Reinson. *II Horseless Age* 36: 59 J 1 '15
- S. A. M. suggests standard names. *Automobile* 33:303 Ag 12 '15
- Solving the spares problem: the Maxwell company's Newcastle plant. *II Automobile* 32:316-20 F 18 '15
- Standardizing names of parts. *Automobile* 33: 236-7 Ag 5 '15

See also Automobiles—Standards

**Automobile patents**

- Broad demountable rim patent upheld. *II Horseless Age* 36:224-5 M 1 '15
- Chamber of commerce to defend Kardo patents suit. *Horseless Age* 34:839-30 J 9 '14
- Court holds Baker front axle patent to be void. *Horseless Age* 35:285, 293-4 Mr 3 '15
- Decision rendered in carburetor suit. *Automobile* 32:296 F 11 '15
- Delco wins in self-starter patent suit. *Horseless Age* 35:324-324a Mr 10 '15
- N. A. C. C. cross-licensing patent plans now almost completed. *Automobile* 33:39 J 1 '15
- Ohio court dismisses Kardo axle patent suit. *Horseless Age* 35:525 J Ap 21 '15
- Perlman wins decision in long-contested demountable rim patent suit. *Automobile* 33: 394-5 Ag 26 '15
- Two-speed axle decision. *Automobile* 33:79-80 J 1 '15

**Automobile racing**

- Amerlen's engineering triumph at the Sheepshead Bay speedway. A. L. Clayden. *II Automobile* 33:696-8 O 14 '15
- Astor cup won at 102 miles per hour. *II Horseless Age* 36:351-3 J 15 '15
- Burnham's Peugeot wins Oklahoma City race. *Horseless Age* 35:593 My 5 '15
- Burnham's Peugeot wins Oklahoma race. C. S. Moore. *II Automobile* 32:794-5 My 6 '15
- Dario Resta's Peugeot wins grand prize. *Horseless Age* 35:291-2 Mr 3 '15
- De Palma, in Mercedes, wins at 89.84 miles per hour. *Automobile* 32:960-73 Jo 3 '15
- De Palma's Mercedes wins both Elgin races. *Horseless Age* 34:306-7 Ag 26 '14
- Fluctuations of the averages made in the season's leading contests. *Horseless Age* 36:105 Ag 15 '15
- Getting ready for the international swoop-stinks; cars and drivers who will contest. *II Horseless Age* 35:669-72 My 19 '15
- Holiday racing on the speedway. *II Horseless Age* 36:1-3 J 7 '15
- How the Stutz cleaned up at the Elgin races. *Horseless Age* 36:214-15 S 1 '15
- Little trouble at Twin Cities. *Automobile* 33:457 M 9 '15
- Low speed marks Providence century. C. P. Shattuck. *II Horseless Age* 36:312-13 O 1 '15
- Maxwell Mercer Duquesne July 4 winners. *Automobile* 33:53-9 J 1 '15
- Mulford wins 300-mile race on Des Moines speedway. *II Automobile* 33:296-7 Ag 12 '15
- 1914 a good contest year. *Automobile* 31: 1147-1 J 24 '14
- 1914 a year of speed records. J. T. Shaw. *Horseless Age* 34:839-840b J 9 '14
- Oldfield's Maxwell non-stop winner at Venice. *II Horseless Age* 35:392-392b Mr 24 '15
- Over 100 miles per hour on Sheepshead speedway. *II Horseless Age* 36:306-7 O 1 '15
- Overhead valves triumph. A. L. Clayden. *II Automobile* 32:973-7 Jo 3 '15
- Pullen wins Corona race at 87.7 m. p. h. *II Automobile* 31:1017-19 J 3 '14
- Resta in Peugeot victorious. *II Automobile* 33: 1-5 J 1 '15
- Resta takes Harkness cup race at 105.39 miles per hour. *II Automobile* 33:846-7 N 4 '15
- Resta wins again. *II Automobile* 33:446-7 Mr 11 '15
- Resta wins Century at 101.86 miles per hour. *II Automobile* 33:294-5 Ag 12 '15
- Resta wins grand prize. A. G. Waddell. *II Automobile* 32:398-9 Mr 4 '15
- Resta's generalship won Vanderbilt. A. G. Waddell. *II Automobile* 32:512-13 Mr 18 '15
- Resta's record 101.86 miles per hour. *II Horseless Age* 36:160-7 J Ag 15 '15

Review of Corona road race. H. G. Hall. *II Horseless Age* 34:836-8 D 9 '14

Rickenbacker wins Narragansett 100-mile. J. T. Sullivan. *II Automobile* 33:554-5 S 23 '15

Setting for the 500-mile race at Indianapolis. A. L. Clayden. *II Automobile* 33:879-82 My 20 '15

- Speed records of the 500-mile race. *Automobile* 32:930-1 My 37 '15
- Stutz cars triumph at Elgin road races. *II Automobile* 33:361-5 Ag 26 '15
- Stutz triumphs at 103.6 miles per hour. J. M. Schipper. *II Automobile* 33:685-95 O 14 '15
- Stutz wins first and second places at Twin Cities. *Automobile* 33:455-6 S 9 '15
- Summary of the C. A. C. trophy race. *Horseless Age* 34:308-9 Ag 26 '14
- Thirty-two cars named for Vanderbilt cup race. *II Horseless Age* 35:224a-224c F 17 '15
- 350-mile Astor cup auto race. *II Sci Am* 113: 357-+ O 23 '15
- Twenty-two cars qualify for 500-mile race. D. Beecroft. *Automobile* 32:923-5 My 27 '15
- Twin City race won by fifth of second. *II Horseless Age* 36:260-1 J Ag 15 '15
- Vanderbilt cup race also won by Resta's Peugeot. *II Horseless Age* 35:325-8 Mr 10 '15
- Winning of the grand prize. A. G. Waddell. *II Automobile* 32:448-9 Mr 11 '15
- World's records made in 500-mile sweepstakes. *Horseless Age* 35:725-9 Jo 3 '15
- World's records shattered at Chicago. *II Horseless Age* 35:865-8 Jo 30 '15

See also Speedways

**Automobile service stations**

- Can manufacturers have a standard service policy? A. Macaulay. *Horseless Age* 35:506-8 My 5 '15
- Metropolitan section of S. A. M. discusses truck makers' obligations to customers. B. B. Bachman. *Automobile* 32:772-3 Ap 29 '15
- Service heads want standard policy. *Automobile* 33:283-5 J 18 '15
- Service managers discuss their problems. J. Smith. *Horseless Age* 36:9-10 J 7 '15
- Sub-division, saving and safety. *Horseless Age* 34:869-70 D 16 '14
- Truck makers to decide on standard service policy. L. V. Spencer. *Automobile* 32:841-4 My 13 '15

See also Garages

**Automobile signals**

- Rear signaling devices for automobiles. *II Sci Am* 113:274-5 M 25 '15

See also Automobile horns

**Automobile touring**

- Motor travel in desert country of southern California. L. H. Paddy. *II Eng & Min J* 100:835-7 N 20 '15
- Sixth volume added to Blue books, maps. *Automobile* 32:595-9 Ap 1 '15
- Three routes offered to Pacific coast tourists. *Automobile* 31:1079 J 10 '14

**Automobile trailers**

- Industrial plant automobile trailer. *II Iron Age* 96:133 J 15 '15

**Automobiles**

- Abbott-Detroit eight. *II Automobile* 33:520-1 M 16 '15
- Abbott eight a new model with interesting features. *II Horseless Age* 36:14-15 J 7 '15
- Allen line two models on one chassis. *II Automobile* 33:882-3 N 11 '15
- Argo chassis larger for 1916. *II Automobile* 33:110-12 J 15 '15
- Auburn models for 1916—a six and four. *II Horseless Age* 35:812 Jo 18 '15
- Auburns, 1916—a six and a four. *II Automobile* 33:156-7 J 23 '15
- Auton and the electric car. J. A. Becker. *Elect J* 46:590-2 M 18 '15
- Briscoe eight and four in same chassis. *II Automobile* 33:151-5 J 23 '15
- Briscoe line, 1916, which will be made up of an eight and a four. *II Horseless Age* 36:12-13 J 7 '15
- Bullets for 1916 to be sixes exclusively. *II Horseless Age* 35:770-1 Jo 9 '15

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- Buicks, 1916, are both sixes. *II* Automobile 32:1068-71 *Je* 17 '15
- Cadillac eight in second year. *II* *diag*s Automobile 33:188-91 *Jl* 29 '15
- Cadillac eight with detail refinements known as type 53. *II* Horseless Age 36:134-5 *Ag* 1 '15
- Cameron six touring or roadster. *II* Automobile 33:329 *Ag* 19 '15
- Car of 1915. S. P. McMin. *II* *Sci Am* 112:10-1 *Ja* 2 '15
- Car that stays young. Automobile 33:429-31, 517-19, 612-15 *S* 2, 16, 30 '15
- Chalmers brings out light six. *II* *diag*s Automobile 33:925-7 *N* 18 '15
- Chalmers cars in three models for 1916, including a new six-10. *II* Horseless Age 36:50-1 *Jl* 14 '15
- Comparison of features of the average American car for 5 years. Automobile 31:1193 *D* 31 '14
- Cornellian—a unique light car. *II* Horseless Age 35:814 *Je* 16 '15
- Cornellian—body acts as frame in new model. *II* *diag* Automobile 32:726-7 *Ap* 22 '15
- Crow-Merkhart model for 1916. *II* Horseless Age 36:171 *Ag* 15 '15
- Daniels eight of strong construction. *II* Automobile 33:756 *O* 21 '15
- Davis line is four, two sixes and twelve. *II* Automobile 33:478 *S* 9 '15
- Dorris six—original design. *II* *diag*s Automobile 32:636-8 *Ap* 8 '15
- Dort continues roadster and touring. *II* *diag* Automobile 33:193-5 *Jl* 29 '15
- Driggs-Seabury light cars. *II* *diag*s Horseless Age 36:169-70 *F* 3 '15
- Eleven new chassis seen at show. *II* Automobile 32:12-17+ *Ja* 7 '15
- Empire line—two models. *II* Horseless Age 36:380-1 *O* 15 '15
- Empire—new model 33. *II* Horseless Age 35:570-1 *Ap* 28 '15
- Empire 1916—larger high-speed motor. *II* *diag*s Automobile 32:680-3 *Ap* 15 '15
- Empire six in production. *II* Automobile 33:748-9 *O* 21 '15
- Enger twelve with individual valve cams. *II* *diag*s Automobile 33:603-4 *S* 30 '15
- Engineering development—1915; alphabetical list of cars and description of new designs. *diag*s Automobile 31:1228-60 *D* 31 '14
- Farmack four—overhead valves. *diag*s Automobile 33:892 *N* 11 '15
- Flat bodies of distinctive design. *II* *diag*s Automobile 33:60-2 *Jl* 8 '15
- Forty cars at Importers' salon. *II* Automobile 32:18-19+ *Ja* 7 '15
- Gilda six—one model only. *II* Horseless Age 36:266-7 *S* 15 '15
- Gilda six replaces four for 1916. *II* Automobile 33:461-5 *S* 9 '15
- Grant popular-priced six. *II* Horseless Age 34:971-2 *D* 30 '14
- Grant six—larger motor in 1916. *II* Automobile 33:605-7 *S* 30 '15
- Great Western six with many unusual features. *II* Horseless Age 36:74-5 *Jl* 21 '15
- Halladay light six. *II* Horseless Age 35:470-1 *Ap* 7 '15
- Haynes light six models. *II* Horseless Age 35:747 *Je* 2 '15
- Herr-Brooks adds a small four chassis. *II* Automobile 32:608-9 *Mr* 18 '15
- Holler eight. *II* Horseless Age 35:501-2 *Ap* 14 '15
- Holler eight cleverly designed. *II* Automobile 32:857-9 *My* 13 '15
- Hudson, 1916, has yacht line body and is offered at lower figure. *II* Horseless Age 35:765-9 *Je* 16 '15
- Hudson 1916—new boat body. *II* *diag* Automobile 32:1022-5+ *Je* 10 '15
- Hupmobile has larger engine—lower price. *II* Horseless Age 35:728-9 *Je* 2 '15
- Hupmobile—larger motor in 1916. *II* *diag*s Automobile 32:882-5+ *Je* 3 '15
- Hupmobile model K has larger engine. *II* Horseless Age 34:322 *Ap* 26 '14
- Imperial for 1916—a low priced four. *II* Horseless Age 35:808-9 *Je* 16 '15
- Imperial four has large motor. *II* *diag* Automobile 32:1076-7 *Je* 17 '15
- Jackson eight and a four. *II* *diag*s Automobile 33:794-5 *O* 28 '15
- Jeffery four with high speed, long stroke motor. *II* Horseless Age 36:110 *Il* *Jl* 28 '15
- Jeffery new four. *II* *diag*s Automobile 33:183 *Y* *Jl* 29 '15
- Keams extra quick detachable bodies. *II* *diag* Automobile 32:779 *Il* *Ap* 29 '14
- King eight-cylinder for \$1,350. *II* Automobile 31:1000-2 *D* 10 '14
- King eight-cylinder to sell for \$1,350. *II* Horseless Age 31:850 *Il* *D* 9 '14
- Kissel adds four cylinder chassis. *II* *diag*s Automobile 33:699-71 *S* 9 '15
- Kissel adds 14-hp block six. *II* Automobile 31:1124-5 *D* 17 '14
- Kissel kar 42 six. *II* Horseless Age 31:881 *2* *D* 16 '14
- Kissel-Kar new ideas all year model. *II* Horseless Age 36:168 *70* *Ap* 15 '15
- Kline adopts unit power plant. *II* Automobile 31:1032-3 *D* 3 '14
- Kitt 1915 shows little change. *II* Horseless Age 31:323-1 *Ag* 25 '14
- Lewis, 1916, Vt equipped with vacuum electric rear shift. *II* Horseless Age 35:810 *Il* *Je* 24 '15
- Light cars at the show. *II* *Il*. Brown Horseless Age 35:23-1 *Ja* 6 '15
- Lightning and the automobile. C. L. Johnson. *Sci Am* 111:507 *Il* *Ap* 19 '14
- Lippard-Stewart two truckways. *II* Automobile 32:640-1 *Ap* 8 '15
- Loacomb refined both sixes. *II* *diag*s Automobile 32:406-7 *Ja* 17 '15
- Loacomb sixes for 1916. *II* *diag*s Horseless Age 35:778-9 *Je* 9 '15
- McFarlan cars better for 1916. *II* Automobile 33:376 *7* *Ap* 26 '15
- McFarlan line improvement. *II* Horseless Age 36:172-3 *Ag* 15 '15
- McFarlan six improvements. *II* Horseless Age 31:319-20 *Ap* 26 '14
- Madison light six roadster and touring car. *II* Horseless Age 35:810 *Je* 9 '15
- Marton light six. *II* Horseless Age 35:496 *Il* *My* 26 '15
- Marton light six announced. *II* Horseless Age 35:652 *My* 12 '15
- Marton six high speed motor in 1916. *II* Automobile 32:869 *3* *My* 13 '15
- Mattison features continued for 1916. *II* *diag*s Automobile 34:12-15 *Jl* 1 '15
- Marmion 11 with body refinements and detail improvements. *II* Horseless Age 35:471 *Il* *Je* 23 '15
- Maxwell for 1916 with improvements and lower price. *II* Horseless Age 36:146 *Il* *Ag* 1 '15
- Maxwell, 1916, larger price boxes. *II* *diag*s Automobile 33:118-20 *Il* *Je* 2 '15
- Maxwell racers—some technical details. *II* Horseless Age 35:519-20 *Ap* 14 '15
- Maxwells designed for 100 miles per hour. *II* Automobile 32:628-30 *Mr* 26 '15
- Meers 30 a low-priced light car. *II* Horseless Age 36:106 *Il* *Je* 25 '15
- Morris shows new models. *II* Horseless Age 34:32-3 *Ja* 6 '15
- Miscellaneous mechanical details of show cars. A. C. Woodbury. *II* *diag*s Horseless Age 32:17-21 *Ja* 4 '15
- Mitchell adds six rolling for \$1,585. *II* Automobile 31:1082-3 *Il* *Je* 10 '14
- Mitchell brings out eight and six. *II* Automobile 32:1120-3 *Je* 24 '15
- Mitchell six for 1916 with a long stroke high speed motor. *II* Horseless Age 35:772 *3* *Je* 9 '15
- Moline Knight featured by simplicity. *II* *diag*s Automobile 32:338-9 *Ap* 13 '15
- Moline Knight 46. *II* Horseless Age 35:601-3 *My* 8 '15
- Monarch adds eight cylinder motor; Herschell-Mullman motor interchangeable with Continental six in same chassis. *II* *diag*s Automobile 32:492-3 *Mr* 18 '15
- Moore cars have Continental motors. *II* *diag*s Horseless Age 31:325 *Ag* 25 '14
- Moore 1916 line comprises a 6-34 and a 6-30. *II* Horseless Age 35:874-5 *Je* 30 '15
- Motor cars 1916. Engineer 112:19 *Ja* 1 '15
- National adds a twelve and a six. *II* Automobile 32:940-1 *My* 27 '15
- National highway twelve. *II* *diag*s Automobile 32:336-7 *Ag* 19 '15

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 Niagara four European touches. *II Automobile* 33:118-19 H 2 '15  
 Nine new cars on display at Chicago. *II Automobile* 32:178-81 Ja 28 '15  
 1915--a 7-league stride: eight-cylinder motors--sixes for less than \$800--vacuum feed--spiral bevel gears. *Automobile* 31:1187-93+ D 31 '14  
 Oakland adds eight-cylinder model. *II Automobile* 33:780-91 O 28 '15  
 Oakland four, 1916. *II Automobile* 32:948-50 My 27 '15  
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 Oldsmobile eight, model 44 with helical final drive. *II Horseless Age* 36:362-3 J O 15 '15  
 Oldsmobile eight replaces six new four. *II Hags Automobile* 32:937-9 J. My 27 '15  
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 Overland brings out new six. *II Automobile* 33:278-9 Je 2 '15  
 Overland 85 to sell at lower figure. *II Horseless Age* 35:736-7 Je 2 '15  
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 Overland four price lower. *II Hags Automobile* 32:978-81+ Je 3 '15  
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 Owen magnetic car. *II Hags Automobile* 34:913-14 D 23 '14  
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 Packard brings out twin six chassis. *II Hags Automobile* 32:932-8 My 37 '15  
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 Paige company enters the field of sixes. *II Horseless Age* 34:907-8 D 23 '14  
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 Paige model, the 8-20 announced for 1916. *II Horseless Age* 35:706-7 Ja 9 '15  
 Packard twelve and six for 1916. *II Hags Automobile* 32:1004-6+ Je 17 '15  
 Peerless 48-six. *II Horseless Age* 34:321 Ag 26 '14  
 Peerless four, \$2,000--six at \$2,250. *II Automobile* 31:1034-7 D 3 '14  
 Pilgrim, a new light car from Detroit. *II Horseless Age* 34:915 D 23 '14  
 Pilot introduces an eight and a popular priced six. *II Horseless Age* 36:314-15 O 1 '15  
 Porter-Knight speed creations. *II Hags Automobile* 32:789-93 My 6 '15  
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 Reo five-passenger six for \$1,385. *II Automobile* 31:1063-5 D 10 '14  
 Reo six-cylinder. *II Hags Horseless Age* 34:877-9 D 10 '14  
 Review of the year 1914: automobiles. *Sci Am* 112:7 Ja 2 '15  
 Riviera models and a light 80 Fiat for 1916. *II Horseless Age* 35:848-9 Je 28 '15  
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 Stewart six--a new chassis. *II Automobile* 32:380-1 F 25 '15  
 Studelaker in eleven types on two chassis-models. *II Horseless Age* 35:870-8 Je 30 '15  
 Studelaker refines four and six. *II Hags Automobile* 33:30-2 J 1 '15  
 Westcott concentrates on two sixes. *II Automobile* 33:338-9 Ag 5 '15  
 Westcott--six and four chassis of clean design take four body types. *II Hags Automobile* 32:634-5 Ap 8 '15  
 Willys-Knight price reduced. *II Horseless Age* 35:911 D 23 '14  
 Willys-Knight refinements. *II Automobile* 31:126-7 D 17 '14  
 Willys-Knight which is to sell at a moderate figure. *II Horseless Age* 36:44-5 J 14 '15  
 Winter meeting of S. A. E. in New York. *Hags Horseless Age* 35:58-74, 110-13 Ja 13-20 '15  
 Winton brings out smaller six. *II Automobile* 31:1172-3 D 24 '14  
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**Accidents**

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**Axles**

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 Must axles be turned askew to cushion one-wheel shocks horizontally. *Automobile* 32:593+ Ap 1 '15  
 New type of American axle. *Hags Horseless Age* 35:206 F 10 '15  
 Pivoted front axle design. A. C. Woodbury. *Hags Horseless Age* 35:419-20 Mr 24 '15  
 Relative merits of solid, three-quarter and full-floating axles. A. M. Laycock. *Hags Horseless Age* 34:928-31 Ag 26 '14  
 Sheldon worm gear axle. *II Hags Automobile* 32:946-7 My 27 '15  
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**Bearings**

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 Court holds Baker front axle patent to be void. *Horseless Age* 35:285, 293-4 Mr 3 '15  
 Directions for adjusting main and connecting-rod bearings. *Automobile* 31:1114 D 17 '14  
 Installing the center ball bearing. *Hags Automobile* 32:192 Ja 28 '15  
 Maximum loads on automobile road wheel bearings. H. G. Baldwin. *Hags Horseless Age* 36:319-21, 371-3 O 1-15 '15  
 Most accurate automobile part: methods of ball bearing manufacture call for microscope inspection of material and product. L. Claydon. *II Automobile* 32:701-5 Ap 23 '15

**Bodies**

Adapting the touring body for winter use. *II Horseless Age* 35:359-61 O 15 '15  
 American automobile coachwork: criticism of domestic and foreign car bodies. J. J. Ida. *II Sci Am* 112:31+ Ja 2 '15

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Automobile bodies. H. J. Hayes. Horseless Age 35:59-60 Ja 13 '15  
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 Marked improvement in body design. G. J. Mercer. II *diag* Automobile 32:219-25 F 4 '15  
 Quantify production favors metal body. II J. Hayes. Automobile 32:37 Ja 7 '15  
 Stutz features new bodies. II Automobile 33:240-1 Ag 5 '15  
 Three-quarter cabriolet coupé. G. J. Mercer. *plans* Automobile 32:494-5 Mr 18 '15  
 Torpedo motorcar. II *Sci* Am 112:346 Ap 10 '15  
 Trends in touring body designs. G. J. Mercer. *diag* Automobile 33:67-9 J1 8 '15  
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**Brakes**

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**Chassis**

Aluminum in automobile chassis. A. L. Clayden. J. E. Diamond. Automobile 33:330-1 Apr 19 '15  
 Chassis keeps pace with motor. J. E. Schlpper. *diag* Automobile 32:882-3 My 20 '15  
 Crane-simplex a high power design. II *diag* Automobile 33:414-17 J 8 '15  
 Eleven new chassis seen at show. II Automobile 32:12-17+ Ja 7 '15  
 New Paterson six chassis. II Automobile 33:388 Ag 20 '15  
 Pontiac chassis for the trade. II Horseless Age 35:434 Mr 31 '15  
 Scientific chassis. A. P. Brush. II *diag* Automobile 32:802-5 My 8 '15  
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 Friction clutches. *diag* Horseless Age 34:941-6 D 30 '14  
 Notes on automobile clutches. W. F. Herst. Horseless Age 35:797 Jo 16 '15  
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**Cost**

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**Cost of operation**

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Small automobile opens up new opportunities in government stream gaging work. E. A. Porter. II *Eng* Rec 71:490-1 Ap 17 '15

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**Design**

Automobile drafting room. R. W. Weaver. II *diag* Horseless Age 34:232-4, 256-N, 297-N, 332-5, 368-70 Ag 6-N 2 '14

Engineering analyses. A. L. Clayden. *diag* Automobile 32:5-9, 56-9, 103-5 Ja 7 21 '15  
 Entries vary greatly in displacement. II Automobile 32:588-7 J 1 My 20 '15  
 500-mile race in retrospect; engineering effect on touring car design. A. L. Clayden. Automobile 32:1016-19 Jo 10 '15  
 Gyrostatic action. J. G. Gray. II *diag* *Sci* Am 8 79:172-3, 188 Mr 13-20 '15  
 High spots in design. A. L. Clayden. Automobile 33:784-6 ( ) 78 '15  
 Maximum loads on automobile road wheel bearings. H. G. Baldwin. *diag* Horseless Age 36:319-21, 371-3 ( ) 1-15 '15  
 Motor home-car. II *Sci* Am 113:378-8 11 '15  
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 Three wheeled automobile of unusual design. II *Sci* Am 113:323 ( ) 9 '15  
 Trend of design could be improved. C. L. Davis. Automobile 32:668-9 Ap 15 '15  
 What the new models show in design tendencies. E. A. Stephenson. Horseless Age 36:211-13 N 1 '15  
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 Walter differential uses irreversible worm. II Automobile 32:396 Jo 3 '15

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**Electric equipment**

Automobile electricity. A. L. Clayden. *diag* Automobile 33:749 J 1 21 '15  
 Battery-charging methods for electric starting and lighting equipments for gasoline automobiles. II *Elec* R & W *Elec* N 66:14-5 Ja 23 '15  
 Battery systems improved in detail. *diag* Automobile 32:281 F 4 '15  
 Burr electrical units standardized. II *diag* Automobile 33:39-9 ( ) 25 '15  
 Car with electric magnetic transmission a solution of the change speed gear problem. II *Sci* Am 113:468 N 27 '15  
 Coffer hammer switch for gas engine automobiles. II *Elec* R & W *Elec* N 66:25-6 Ja 13 '15  
 Electric auxiliaries on automobiles. G. T. Hamblett. *Elec* W 61:196-5 11 19 '14  
 Electric equipment for Ford cars. G. L. H. 68:571 ( ) 2 '15  
 Electric gear shifter. II *Elec* W 65:578-80 F 27 '15  
 Electrical equipment of automobiles. I. M. Heldt. *diag* Horseless Age 34:530-2, 628-30, 652-3, 692-4 228-30, 758-61, 790-2, 827-3, 836-7, 888-91, 918-20, 978-81, 1010-2, 173-81, 210-12, 216-9, 274-7, 317-16, 314-6, 350-2, 412-16, 412-6, 416-8, 544-9, 678-81, 610-11, 654-6, 708-11, 740-2, 775-7, 810-11, 841-2, 882-3, 96-9, 47-8, 72-5, 108-9, 148-50, 174-6, 220-1, 274-6, 327-9 ( ) 7, 21 10 30 '14, Ja 27 Ap 7, 21 Mr 6, 19-41 '15  
 Electrical equipment specifications, details of the electric lighting and starting systems fitted to American cars during the season. Horseless Age 36:264-5 ( ) 15 '15  
 Electrical instruments in lighting and starting circuits. A. L. Clough. Horseless Age 31 224 1 23 '14  
 Electricity in the manufacture of electrical machinery. II *Elec* R & W *Elec* N 66:297-9 F 12 '15  
 Function of the circuit breaker. *diag* Horseless Age 36:318 ( ) 1 '15  
 Genemotor, a self starting and lighting system for Fords. II *diag* Horseless Age 35 447-8 Ap 21 '15; *Plans*. Automobile 32:743 Ap 23 '15  
 Genemotor, a single unit starting and lighting system for moderate priced automobiles. M. J. Pitch. II *diag* *Sci* Am 113:286 7 My '15  
 Good improved starting, lighting and ignition battery. II Horseless Age 35:461 Mr 26 '15  
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 Repairs of automobile electric equipment. A. L. Clough. *Horseless Age* 34:811-12 D 3 '14  
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 Business in equipping cars with new accessories. A. L. Clough. *Horseless Age* 35:493-4 Ap 14 '15  
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 Equipping the automobile for travel. C. A. Myers. *Il Sci Am* 112:200 I 27 '15  
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**Frames**

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 Front wheel drive design. *diag Automobile* 32:683 Ap 15 '15  
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 Gear calculations. *Horseless Age* 35:781 Ja 9 '15  
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 Manufacture of worm gearing by a new process: a comparison of the straight and hourglass type of worms. C. T. Myers. *Il diag Horseless Age* 35:116-21 Ja 20 '15  
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 Russell internal gear drive axle. *diag Automobile* 32:313 I 18 '15  
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 Spiral type bevel gears for automobile drives. A. L. Stewart. *Horseless Age* 35:801-2 Ja 16 '15; *Discussion. Automobile* 32:1110-11 Ja 24 '15  
 Vulcan gearshift stronger and lighter. *Il diag Automobile* 31:1272-3+ D 31 '14

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How scientific design and use of aluminum alloys will cheapen motoring, A. L. Clayton, *II diag Automobile* 33:225-30 Ag 5 '15

Malleable iron castings for the automobile industry, R. Moldenke, *Horseless* Age 35:49-78 Ja 13 '15; *Sama, Iron Tr R* 55:121-4; Discussion, R. Tauceda, 56:224-4 Ja 28 '15

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Types of automobile crankshaft lathes, J. C. Spence, *Mach* 21:569 Mr '15

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New system of spring suspension for motor cars. II Engineer 119:142 F 6 '15

Partial and total deflections of leaf springs en masse. D. Landau and A. Golden. Horseless Age 35:104-7, 153-4, 213-16, 250-2, 278-81, 316-18, 383-6, 416-18, 447-9 Ja 20-27, F 10-24, Mr 3, 17-31 '15

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Science in spring manufacture. A. L. Clayden. II Automobile 32:835-40 My 13 '15

Scientific manufacture of automobile springs. J. C. Arndt. II Horseless Age 34:921-3 D 23 '14

Simple machine for comparing spring action. H. Pastoriza. II Automobile 33:707-8 O 14 '15

Weight and speed suspension factors; discussion. Automobile 32:1118-19 Ja 24 '15

**Standards**

Eight S. A. E. standard reports. A. L. Clayden. Automobile 32:745-60 Ap 29 '15

Four design remains unstandardized. J. B. Schipper. diags Automobile 33:854-5 O 7 '15

Mid-west S. A. E. section in Chicago. diags Automobile 33:736-9 O 21 '15

New S. A. E. standards. Horseless Age 34:330-8 Ag 26 '14

New S. A. E. standards recommendations. diags Horseless Age 35:831-44 Ja 23 '15

Report of standards committee of S. A. E. Automobile 32:33-6 Ja 7 '15

S. A. E. advances. Automobile 31:1148-9 D 24 '14

S. A. E. standards committee meeting at Detroit. Horseless Age 35:576-6 Ap 28 '15

S. A. E. standards committee work. Automobile 32:1112-13 Ja 24 '15

S. A. E. winter session produces six new standards. Automobile 32:83-6 Ja 14 '15

Standardization work in Great Britain. Horseless Age 30:100 J1 28 '15

**Starting devices**

Delco wins in self-starter patent suit. Horseless Age 35:324-324a Mr 10 '15

Miscmann device starts heavy motor when cranked slowly by hand. II diags Automobile 33:431 S 2 '15

Momentary current of starting motors. B. F. Bailey. Horseless Age 35:850 Ja 23 '15

Starter driven. P. M. Heldt. diags Horseless Age 36:47-8, 72-3, 108-9, 148-50 J1 14-Ag 1 '15

Starting an automobile by wireless waves. Sci Am 113:323 O 9 '15

Starting motors. P. M. Heldt. diags Horseless Age 35:882-3; 36:20-1 Ja 30-J1 7 '15

Stewart adds Ford starter. II Automobile 33:712 O 14 '15

**Statistics**

See Automobile Industry

**Steering gear**

Improving the steering. A. L. Clayden. diags Automobile 33:407-10 S 2 '15

Pivoted front axle design. A. C. Woodbury. diags Horseless Age 35:410-20 Mr 24 '15

Steering gears offer many problems. A. L. Clayden. diags Automobile 33:913-16 N 18 '15

Steering pivots. C. B. Duryen. diags Horseless Age 35:490 Ap 14 '15

**Steering knuckles**

Steel for steering knuckles. H. F. Lake. II Iron Tr R 56:611-12+ Mr 25 '15

**Stopping**

Power required to stop an automobile. W. T. Francis. diags Sci Am S 78:406 D 30 '14

**Taxation**

Power formulas used for taxation in different countries. Automobile 33:160-1 Ja 21 '15

**Terminology**

S. A. E. makes progress in nomenclature work. Horseless Age 36:147 Ag 1 '15

S. A. E. suggests standard names. Automobile 33:303 Ag 13 '15

Standardizing names of parts. Automobile 33:236-7 Ag 5 '15

**Testing**

Cadillac 8 averages 72.49 miles per hour in A. C. A. tests. Automobile 33:743 O 21 '15

Certified tests by dealers as sales helps. Horseless Age 35:597-8 My 5 '15

Franklin dealers average 32.1 miles per gallon in fuel economy test. Automobile 32:820 My 6 '15

Measuring automobile efficiency. A. B. Browne and E. L. Lockwood. II Automobile 32:374-6 F 25 '15

Official high gear test of Marmon car. II Horseless Age 35:591 My 5 '15

Test automobiles in Detroit on artificial hill. II Eng Rec 72:350 S 18 '15

**Tires**

See Tires (automobile)

**Tops**

Rex convertible top - Sedan or open car. II Automobile 33:342 Ag 19 '15

Top and upholstery often neglected. M. C. Illiek. Automobile 31:1024-5 D 3 '14

Two demountable top designs. C. J. Mercer. II Automobile 33:963-5 N 25 '15

**Transmission**

Argo transmission features. Automobile 33:111 J1 15 '15

Car with electro-magnetic transmission; a solution of the change-speed gear problem. II Sci Am 113:405 N 27 '15

Correct propeller shaft layout. C. W. Spicer. diags Automobile 32:379 F 25 '15

Electrical transmission at S. A. E. Metropolitan section monthly meetings. Horseless Age 35:319-20 Mr 3 '15

Friction losses in the universal joint: abstracts. P. F. Walker and W. J. Malcolmson. Iron Age 94:1438-9 D 24 '14; Am Soc M 19 J 37:17-20 Ja '15; Automobile 32:378-9 F 25 '15

Hydraulic transmission. diags Horseless Age 35:234-5 F 17 '15

Owen magnetic; five cars make 800-mile run through mountain sections. II Automobile 33:616-17 S 30 '15

Owen magnetic makes progress. II diags Automobile 33:102-3 J1 15 '15

S. A. E. gas-electric committee reports. diags Automobile 32:401-4 Mr 4 '15

Universal joint efficiency. C. W. Spicer. Horseless Age 35:74 Ja 13 '15

**Upholstery**

Ford methods and the Ford shops. F. L. Faurote. II Eng M 40:67-87 Ap '15

Top and upholstery often neglected. M. C. Illiek. Automobile 31:1024-5 D 3 '14

**Vibration**

Car vibration and engine unbalanced forces. L. B. French. Horseless Age 35:52-3 J1 14 '15



**Automobiles—Vibration—Continued**

- Engine balance and vibration. A. L. Clayden. *diag Automobile* 32:261-4, 310-13 F 11-18 '15  
Packard uses vibration damper. *diag Automobile* 33:246 Ag 5 '15  
"Twelve" from the standpoint of vibration. P. M. Heldt. *diag Horseless Age* 36:271-3 S 15 '15

**Weight**

- Franklin—careful design gives lightness. *diag Automobile* 33:630-43 O 7 '15  
How scientific design and use of aluminum alloys will cheapen motoring. A. L. Clayden. *il Automobile* 33:325-30 Ag 5 '15  
Weight of cars. *Horseless Age* 34:847-8 D 9 '14

**Wheels**

- Autoreseue. *Horseless Age* 35:463-4 Ap 7 '15  
Broad demountable rim patent upheld. *il Horseless Age* 36:224 F 8 '15  
Perlman wins decision in long-contested demountable rim patent suit. *Automobile* 33:394-5 Ag 26 '15  
Pressed steel wheels for pleasure cars. O. A. Parker. *Horseless Age* 35:804 Je 16 '15  
Rim and wheel equipment of the General. *il* F. H. Moyer. *il diag Horseless Age* 35:404-6 Mr 24 '15  
Tires and tire sundries, rims and wheels at the New York show. H. H. Brown. *diag Horseless Age* 35:108-9 Ju 20 '15  
Wire wheels vs. wood wheels. G. W. Houk. *diag Horseless Age* 35:66-8 Ju 13 '15  
Wood wheels vs. wire wheels. R. H. Mudge. *Horseless Age* 35:63-5 Ju 13 '15  
*See also Automobiles—Axles; Tires (automobile)*

**Windows**

- Substitute for glass in automobiles. *Sci Am* 112:401 My 1 '15

**Automobiles, Care of**

- Storing of a machine for the winter. *Automobile* 31:164-5 D 24 '14

**Automobiles, Electric. See Electric vehicles****Automobiles, Industrial**

- Automobile versus horses in road-work super-vision. E. W. James. *Eng N* 73:769 Ap 22 '15  
Contractor and the automobile. G. D. Crain, jr. *Eng R & W* 1906:68423-6 Mr 6 '15  
Use of automobiles in water works service at Worcester, Mass. G. W. Hutchelder. *Eng & Contr* 42:333-4 O 7 '14  
*See also Motor trucks*

**Automobiles, Military**

- Auxiliary military motor cars. *il Sci Am N* 79:116-17 F 20 '15  
Belgian armored cars most efficient. W. F. Bradley. *il Automobile* 33:8-10 J 1 '15; Abstract. *Eng M* 50:298-100 O '15  
France builds armored cars. W. F. Bradley. *il Automobile* 31:1092-1101 D 17 '14  
French mount 75mm. gun on 30 h.p. chassis. W. F. Bradley. *il Automobile* 32:306-9 F 18 '15  
Military tactics and the motor. *il Sci Am* 112:8-9 J. Ja 2 '15  
Our army wireless automobiles. C. H. Clardy. *il Sci Am* 112:478 My 22 '15  
Searchlight automobile for the Italian army. *il Sci Am* 113:273-4 M 25 '15  
War truck does 60 miles per hour. *il Automobile* 32:709 Ap 22 '15  
*See also Automobiles in war; Motor trucks, Military*

**Automobiles, Steam**

- Motor fuels. V. H. Lawson. *Am Gas Light J* 103:180-1 M 20 '15  
Stanley steamer has radiator condenser. *il plan Automobile* 32:606-7 Mr 18 '15  
*See also Motor buses, Steam*

**Automobiles and roads**

- Heavy motor vehicles—wheels and weights. W. W. Beaumont. *Engineer* 119:822 My 30 '15  
Motor truck and the road; who should pay the road tax? J. H. Harwhite. *il Sci Am* 112:66 J 17 '15  
Traffic; present tendencies, probable development and regulation. A. W. Dunn. *Good Roads n s* 9:55-6 F 6 '15

**Automobiles in war**

- American ambulances in the field. *il Automobile* 32:266-9 F 1 '15  
Cars and trucks behind the lines. W. F. Bradley. *il Automobile* 32:336-9 Mr 25 '15  
Gasoline war; uses of motor vehicles close to the front and of methods of keeping them in repair. *Horseless Age* 35:421-2 Mr 24 '15  
Military tactics and the motor. *il Sci Am* 112:8-9 J. Ja 2 '15  
Mobile repair shops give war service. W. F. Bradley. *Automobile* 32:884-5 N 11 '15  
Motor truck in modern military service. *il Sci Am* 8 79:286-2 My 1 '15  
Russia's American motor cars. W. W. Nutting. *il Horseless Age* 36:363-3 J 1 '15  
Saving trucks at the front in France. W. F. Bradley. *il Automobile* 32:31-3 Ja 14 '15  
War trucks arrive in France. W. F. Bradley. *il Automobile* 32:226-31 F 1 '15  
*See also Ambulances; Automobiles, Military; Motor cycles in war*

**Averages**

- Averages again. *J Account* 15:171-2 F 1 '11

**Aviation. See Aeronautics****Aviators**

- Health requirements for the aviator. F. K. Schell. *Sci Am* 8 79:45 Ja 16 '15

**Axle lighting. See Car lighting****Axles**

- Car-burdened collar and webbing retain worn button and axle. A. R. Johnson. *il diag Elec Ry J* 45:394 F 6 '15  
How an axle failed in crash. *il Iron Tr R* 56:607-10 J Mr 25 '15  
Progressive axle fracture. E. W. Miller. *Eng N* 73:537-8 Ap 29 '15  
Rebuilding car axles. R. W. Rogers. *diag Ry Age (Mech ed)* 58:111 D '14  
Study of an axle built for a motor truck. J. J. Younger. *il diag Am Soc M E J* 5 42:9 Ag '15; Same. *Iron Tr R* 56:131-4 G 24 '15; Same cond. *Hot Chem Age* 26:11-4 Ag 1 '15; Abstract. *Iron Age* 96:7, 11-14, 16-18 Jan '15  
Thrust plate for worn car axle. *diag Ry J* 55:635 Mr 27 '15  
Why did this axle break? *Eng N* 73:490 Mr 11 '15  
*See also Bentling*

**Axles, Automobile. See Automobiles—Axles, Motor trucks—Axles****Azimuth**

- Azimuth by a simple method. J. A. Macdonald. *Eng N* 74:369-70 J 21 '15; Same. *Eng & Min J* 109:511 N 20 '15  
Azimuth observations on planets by daylight. H. V. R. Reynolds. *Eng N* 73:770 Ap 28 '15; Same. *Eng & Min J* 99:476 M 5 '14

**Azulene**

- Blue hydrocarbon occurring in some essential oils. A. E. Diels. *Am Chem Soc J* 37:167-71, 157-74 Ja, Je '15

**B****Baalbek**

- Mysterious Baalbek, whose magnificent temples show the hands of many ages and nations. Mrs. T. E. Lathrop. *il Sci Am* 11 78:407-10 D 26 '14

**Babbitt metal**

- Composition of babbitt metal. H. H. Turpin. *Eng W* 65:169-70 Ja 10 '15

**Babylon****Antiquities**

- Resurrection of Babylon. C. J. Hall. *Sci Am N* 80:66 J 31 '15

**Babylonia****Antiquities**

- Characteristics of hygienic ages: reflex from New Mexico and from Hindu lands. *il Sci Am* 112:87-9 Ja 23 '15

**Back filling. See Trenches****Bacteria**

- Production of light by animals. F. Babbington. *il J Fr Inst* 180:516-27 N '15

- Bacteriological incubator**  
Electric bacteriological incubator. II Elec W 66:305 Jan 30 '15
- Bacteriology**  
Bacterial flora of trees and men. S. J. Maher. Sci Am 80:158-60 S 4 '15  
Discoveries about bacteria. R. Lankester. Sci Am 79:87 F 8 '15  
Experiments on life without microbes. J. Boyer. II Sci Am 111:501 D 19 '14  
Sampling outfit for bacterial samples. R. S. Weston. II diag Long N 72:1265 D 24 '14  
Variation in bacteria. J. O. Jordan. Sci Am 113:210 S 4 '15  
*See also* Milk—Bacteriology; Soil bacteriology; Water—Bacteriology
- Badin, North Carolina**  
Factory city beautiful at low cost. II plans Iron Age 96:782-6 Ap 8 '15
- Bakeland, Leo Hendrik, 1863-**  
Sketch. por Long M 50:303 N '15
- Bag houses**  
Metallurgical smoke. C. H. Fulton. II diag U S Bur Mines Bul 84:44-59 '15  
Treating sulphurous fumes at the Mammoth smelter. A. H. Martin. II Met & Chem Eng 12:769-70 D '14
- Baggage. See** Electric railroads—Baggage
- Baggage and express cars**  
Baggage-buffet cars for the Union Pacific R. II diag Ry R 56:9-10 Jan 2 '15  
Jersey Central steel baggage and mail equipment. II diag Ry Age 58:301-4 F 19 '15; Same. Ry Age (Month ed) 89:133-7 Mr '15  
Steel dynamo baggage cars for the Union Pacific R. R. II diag Ry R 56:469 Ap 3 '15
- Baghouses. See** Bag houses
- Bagley scraper. See** Road making machinery
- Bahia, Brazil**  
Electrical opportunities in Brazil. II. N. Douthett. Elec W 66:425-6 Ag 21 '15
- Balze**  
Facts about balze. J. Strund. Textile World 49:663-4 S '15
- Bakelite**  
Bakelite suit decision. Met & Chem 10ng 13: 411-14 J1 '15
- Bakers and bakeries**  
Electricity in a wholesale grocery establishment. II Elec R & W Elec'n 67:503-6 S 18 '15  
Electricity in bakeries. II Elec R & W Elec'n 66:716-21 Ap 17 '15  
Power plant of the Acme tea company. II plans Power 40:906-10 D 29 '14  
*See also* Plan
- Baking powder**  
Determination of carbon dioxide in baking powder and carbonates. II. W. Brubaker. diag J Ind & Eng Chem 7:432-3 My '15  
Egg albumin in baking powder. II. L. Jackson. J Ind & Eng Chem 6:998-1001 D '14
- Balancer sets**  
Direct-current three-wire systems. C. Fox. diag Power 41:506-8 Ap 13 '15
- Balances. See** Scales
- Balancing machines**  
Dynamic balancing machine. II diag Mach 22: 70-1 S '15
- Balata**  
Balata industry. II Sci Am 80:172-3 S 11 '15
- Balconies**  
Five examples of cantilevered auditorium balconies. diag Eng Rec 72:234-5 Ag 21 '15
- Balkan states**  
Balkan frontiers; complex problems that do not conform to race distinctions. Sci Am 80:307 N 13 '15  
Strategic moves of the war. M: R. Hanna. map Sci Am 113:180 Ag 28 '15
- Ball bearing separators**  
Die-casting mold for ball bearing separators. II Mach 21:366 Jan '15
- Ball bearings**  
Ball bearing for lighthouse use. II diag Mach 21:571 Mr '15  
Ball bearing tests involve accurate apparatus. A. V. Farr. II diag Automobile 32:614-16 S 16 '15  
Ball bearings for cotton mills. E. A. Allen. II Textile World 49:631-3 S '15  
Ball bearings in electric motors. II diag Elec W 66:554-9 S 18 '15  
Ball bearings in electric motors. F: H. Poor. II diag Gun Elec 12:631-5 J1 '15  
Ball bearings in theory and practice. R. D. Gray. diag Automobile 32:846-9, 896-9-1 My 13-20 '15; Same. Horseless Age 35:673-5, 713-14 My 10-26 '15  
Ball bearings on electric railway cars; abstract. II Zehnder-Spoerry. diag Am Soc M E J 37:230-1 Ap '15  
Design and operation of ball bearings. H. D. Gray. II Mach 21:862-4 Je '15; Same cond. Iron Age 96:300-2 Ag 6 '15  
Economies of the light car and of ball bearings. A. V. Farr. Elec W 46:239-40 Ag 7 '15  
Fun trouble solved by ball bearings. F. E. Rogers, Jr. II diag Textile World 49:669-71 Ag '15  
Hollow steel bearing balls. M. M. Canok; L. J. Hoover. Mach 21:743-4 My '15  
Ironery mill's experience with ball bearings. R. C. Byler. II Textile World 49:378-80 Je '15  
Lubrication of ball bearings. A. V. Farr. Elec W 65:325-6 Ap 10 '15  
Lubrication of ball bearings. L. G. Long. Mach 21:914-15 J1 '15  
Most accurate automobile part; methods of ball bearing manufacture call for microscope inspection of material and product. A. L. Clayden. II Automobile 32:701-5 Ap 22 '15  
Norma ball bearings now made in America. Eng M 50:sup3-3 O '15  
Pitch diameters of ball bearings. G. C. Hannemann. Mach 21:372 Jan '15  
Relation between axial and radial load on ball bearings. J. Fischer-Hinnen. Am Soc M E J 37:288-9 My '15  
Special ball bearing for lighthouse. II diag Iron Age 96:138 Jan 14 '15  
Use of ball bearings on Swedish railways. diag Ry R 56:600 My 1 '15  
*See also* Ball bearing separators; Bearings
- Ballast**  
Ballasting economy. II Elec Ry J 46:682 O 2 '15  
Blast furnace slag for railway ballasting. II plan Enginocr 120:395-6 O 22 '15  
Burned-clay ballast. Long N 73:103-4 Jan 21 '15  
Burnt clay or gumbo ballast. A. M. Van Aucken. Ry R 56:365-7 Mr 13 '15  
Characteristics of slag and chat ballast. P. H. Hamilton. Ry Age 58:1437-8 Jan 18 '15  
Cleaning stone ballast with screens. II. M. Church. II Ry Age 58:1436-7 Jan 18 '15  
Economical operation of a gravel ballast pit. Ry Age 59:117-19 J1 16 '15  
Mechanical life of ties as affected by ballast. E. Stimson. Long Rec 71:105-6 Jan 23 '15; Same. Ry Age 58:161 Jan 22 '15; Same. Ry R 56:119-21 Jan 23 '15  
Relative efficiency of various ballast materials. G. W. Vaughan. diag Ry Age 59:123-4 J1 16 '15  
Report of A. R. B. A. committee. Ry R 56:400-1 Mr 20 '15  
Results gained with a ballast dresser. II Ry Age 59:529-30 S 17 '15  
Stone ballasting by contract. J. Evans. Ry Age 58:1436 Jan 18 '15  
*See also* Railroads—Track
- Ballistics**  
Penetration of bullets. R: C. Crossman. II Sci Am 112:404 J N 6 '15  
*See also* Projectiles
- Balloons and airships**  
Airship in the field. II Sci Am 80:300 Mr 27 '15  
Government's competition for a naval dirigible. C. Menstbach. Sci Am 112:405 My 1 '15  
Law of similarity and balloon models; abstract. C. Wieschberger. Am Soc M E J 37: 713-13 D '15  
Military value of airships. Sci Am 112:94 Jan 30 '15  
Our first naval dirigible. C. Menstbach. II Sci Am 113:44 J1 10 '15

**Balloons and airships—Continued**

Problems of airship design and construction. *Sci Am S* 80:107 Ag 14 '15

Use of balloons during the siege of Paris, 1870-1; table and charts showing number of ascensions and results. *Sci Am S* 80:229 O 9 '15

Using air for ballast. R. H. Upson. *Sci Am S* 80:142 Ag 28 '15

Zeppelin. *Sci Am* 113:8 J1 3 '15

Zeppelin question; facts and figures indicating the number and capacity of the air fleet. G. Prade. *Sci Am S* 79:214-15 Ap 3 '15

*See also Aeronautics*

**Balls**

Turning a ball on the milling machine. G. Slinger. *Eng Mach* 21:467 Ja '15

Weight of balls or spheres. W. L. Tryon. *Foundry* 43:355a S '15

**Balls, Steel**

Telford ball grinding machine. C. L. Lucena. *Eng Mach* 21:311-14 D '11

**Balsam**

Canada balsam. *Sci Am* 112:470 My 22 '15

**Baltimore, Maryland****Bridges**

Construction of the Gwynn's Falls arch bridge. *Eng Ry Age* 57:1037-10 D 4 '14

Fullway viaduct in Baltimore built on sharp curve with concrete from 705-foot tower. *Eng Rec* 71:544-6 My 1 '15

**Finance**

Annual budget. W. T. Childs. *Muncl J* 39:515-7 O 7 '15

**Sewerage**

Additions to the Baltimore sewage works. *Eng Rec* 71:278-9 Ag 5 '15

Baltimore filtration plant placed in service this week. *Eng Rec* 72:369-70 S 18 '15

Baltimore sewage-pumping plant. W. O. Rogers. *Eng Power* 41:76-8 Ju 19 '15

**Streets**

Baltimore experience in paving street railway tracks. H. D. Willmar, Jr. *Eng Mach* 21:384-5 My 6 '15

Paving methods in Baltimore. H. D. Willmar, Jr. *Eng & Contr* 42:314-6 O 7 '11

**Water supply**

Baltimore filters abound in useful hint on concrete construction and design. J. W. Armstrong. *Eng Mach* 21:581-6 My 8 '15

Baltimore water filtration plant. *Eng Mach* 21:581-6 My 8 '15

Design features of the Montebello water filters. *Eng & Contr* 41:198-9 S 15 '15

Placing a jointed concrete pressure pipe inside a brick tunnel for water supply, Baltimore. *Eng Mach* 21:360-2 Mr 25 '15

**Baltimore & Ohio railroad**

Eighty-ninth annual report. *Eng Ry Age* 59:530-1, 988-90 N 19 '15

Magnolia cut-off improvement on the Baltimore and Ohio railroad. A. W. Thompson. *Eng Mach* 21:369-70 S 18 '15

Operation by electric on Baltimore & Ohio. *Eng Mach* 21:1643-4 N 11 '15

**Baluchistan**

British India. *Eng Ry Age* 59:530-1, 988-90 N 19 '15

**Balustrades. See Railings****Banana flour**

Banana flour, a new substitute for wheat and rye flour. *Sci Am* 113:35 J1 3 '15

**Bananas**

Unloading bananas by machinery. *Sci Am S* 79:209 Ap 3 '15

**Bandages**

Cameron process for slitting and winding strips for surgical bandages and other purposes. *Textile World* 48:346-50 J1 '14

**Bank architecture. See Bank buildings****Bank buildings**

Bank lighting. P. L. Goddard. *Arch & Bldg* 47:256-61 J1 '15

Banking house of J. P. Morgan & co. *Arch & Bldg* 47:15-14 Ja '15

First national bank of Appleton, Wis. *Arch & Bldg* 46:185 S 15 '14

Hartford national bank. Hartford, Connecticut; views and plans. *Arch & Bldg* 47:16-18 P '15

Heavy trusses and foundation under used in steel bank building. *Eng Rec* 71:713-14 Je 5 '15

National bank at Far Rockaway, L. I., views and plan. *Arch & Bldg* 47:16 Ag '15

New quarters of the Chase national bank, New York. *Arch & Bldg* 47:15-16 Ju '15

Pumbing system in bridgeport bank building. *Arch & Bldg* 47:16 J1 '15

Portfolio of current architecture. *Arch & Bldg* 47:16 J1 '15

Recent bank plan. The work of Thomas Bruce Boyd. J. J. Klaher. *Arch & Bldg* 47:16 J1 '15

Remaking a building for a bank. Holyoke national bank. *Arch & Bldg* 47:16 J1 '15

*See also Vaults*

**Bank protection. See Rivers. Regulation****Bankers' club of America**

Rooms of the Bankers' club of America. *Arch & Bldg* 47:16 J1 '15

**Bankruptcy**

United States minute statutes amended. J. W. Thompson. *Eng Mach* 21:369-70 S 18 '15

*See also Commercial law*

Banks, Federal reserve. *Eng Mach* 21:369-70 S 18 '15

**Banks and banking**

Banking and credit in Australia. *Eng Mach* 21:369-70 S 18 '15

Federal reserve banks and the reserve account. F. H. Snyder. *Eng Mach* 21:369-70 S 18 '15

Inventor's bank. *Eng Mach* 21:369-70 S 18 '15

War and the British currency. *Eng Mach* 21:369-70 S 18 '15

*See also Bank buildings. Federal reserve act*

**Accounting**

Credits from the viewpoint of a controlled party. The accountant. F. H. Snyder. *Eng Mach* 21:369-70 S 18 '15

Verification of data. *Eng Mach* 21:369-70 S 18 '15

**Barbed wire entanglements**

Blowing up barbed wire and entanglements. The police in London. *Eng Mach* 21:369-70 S 18 '15

**Barford's test**

Barford's test for barbed wire. *Eng Mach* 21:369-70 S 18 '15

**Barges**

Western river steamers and barges. *Eng Mach* 21:369-70 S 18 '15

**Barges, Concrete**

Experiments gained from reinforced concrete barges built for the Canadian navy. *Eng Mach* 21:369-70 S 18 '15

**Barges, Motor. See Motor barges****Barite**

Barite of the Appalachian states. T. J. Watson and J. E. Greely. *Eng Mach* 21:369-70 S 18 '15

Barite at Kings Creek. *Eng Mach* 21:369-70 S 18 '15

**Barium**

Barium industry in the United States since the European war. M. T. Watson and J. E. Greely. *Eng Mach* 21:369-70 S 18 '15

Two methods of separation of the metals of the alkaline earth group. A. G. Patterson. *Am Chem Soc J* 37:246-52 O '15

**Barium sulphate**

Results of mining operation work on detection of sulfur in pyrites. *Eng Mach* 21:369-70 S 18 '15

**Barns. See Stables**

**Barometers**

- Aneroid barometers in power houses. P. 11: Jameson. *Power* 42:204 Ag 10 '15  
 Direct-reading barometer. M. Sampson. *diag* *Power* 42:164 Ag 3 '15  
 Measurements for the household. II *diag* U S Bur Stand Chrs 55:118-21 '15  
 Modified precision barometer. A. F. O. Germann. II *Am Chem Soc J* 36:2456-62 D '14

**Barrels**

- New wooden barrel machine. II *diag* *Iron Age* 95:794-5 Ap 8 '15

**Bascule bridges.** See **Bridges, Bascule****Base plates**

- Anchoring base plates for columns. D. N. Becker. *Eng Rec* 70:828 D 5 '14  
 Anchoring base plates for columns. F. F. Allbright. *Eng Rec* 70:678 D 19 '14  
 Inexpensive base plate pattern. S. R. Phelps. *diag* *Foundry* 43:466-7 N '15

**Baseball**

- Identical ball pitchers for indoor batting practice. II *Sci Am* 113:364 O 23 '15  
 Power of mind in baseball. A. Macdonald. *Sci Am* 112:463-4 My 15 '15  
 Psychology of baseball. A. Macdonald. *Sci Am* 113:188-4 Ag 28 '15  
 Psychology of batting in baseball. A. Macdonald. *Sci Am* 112:440-4 My 8 '15  
 Statistics of baseball. A. Macdonald. *Sci Am* 112:418-4 My 1 '15  
 Stealing bases in baseball as a psychologist sees it. A. Macdonald. *Sci Am* 113:53-4 J1 10 '15

**Baseball grandstands.** See **Grandstands****Baseball parks**

- National league ball park at Boston, Mass. II *diag* *Eng N* 74:374-7 Ag 19 '15  
 National league baseball park of reinforced concrete at Boston, W. B. Conant. II *diag* *Concrete* 12:553-5 Ag '15

**Basket willow.** See **Osters****Bassano dam**

- America's greatest irrigation project; Bassano dam, southern Alberta. Z. B. Black. II *Sci Am* 113:252-3 S 18 '15

**Bat-roosts**

- Municipal bat-roost. II *Sci Am* 113:83 J1 24 '15  
 Bates, Lindor Wallace, Jr., 1883-1915  
 Sketch. *por W Soc* 6 J 20:548-51 Je '15

**Bath cars**

- Bath trains of the Russian army. II *Sci Am* 113:13 J1 3 '15; Same. *Metal Work* 84:363-4 S 17 '15  
 Russian bath trains. *Ry Age* 58:378-9 P 26 '15

**Bath houses**

- Jordyce bath house, Hot Springs, Arkansas. II *plans* *Brickb* 24:283-4 N '15

**Bathing benches**

- Projector lighting for the protection of bathing benches. II *Elec R & W Elec'n* 67:485 S 11 '15

**Batholith.** See **Boulder batholith****Bathrooms**

- High-grade bathrooms in Chicago mansion. II *Dom Eng* 71:37-8 Ap 10 '15

**Baths, Public**

- Los baños del mar, the baths of the sea at Santa Barbara. II *plan* *Metal Work* 84:484-5-7 O 1 '15  
 Municipal baths in the United States. II *Dom Eng* 71:331-4 Je 19 '15  
 New municipal bath house in Cleveland. II *plan* *Metal Work* 84:180-3 Ag 6 '15  
 New York city's public baths. *Muniz J* 38:689 My 20 '15  
 Public bath an Americanizer. *Dom Eng* 69:290 D 5 '14  
 Public bathing establishments. II *plans* *Brickb* 24:13-16, pl 4, 6-7 Ja '15  
 Small public bath house in Louisville, Kentucky; plumbing and heating; disposal of waste. II *plan* *Metal Work* 83:561-3 Ap 16 '15

**Baths and bathing**

- Lincoln baths rival continental pools. II *plan* *Metal Work* 84:307-8 S 3 '15

Shall we take a cold bath to cool off after exercising? *Sci Am* 113:373 O 30 '15

See also **Bath cars**; **Bathrooms**; **Baths, Public**; **Shower baths**; **Swimming pools**

**Baths in public schools**

- Baths in the public schools. *Dom Eng* 70:135 Ja 30 '15  
 Shower baths in the schools. J. Graham. II *diag* *Dom Eng* 70:233-5 F 20 '15  
 Shower equipment in Jersey schools. *plans* *Metal Work* 83:837 Je 11 '15

**Bats**

- Malarial mosquitoes as the food of bats. C. H. R. Campbell. II *Sci Am* 113:425 N 13 '15

**Batteries (electric).** See **Electric batteries**;

**Storage batteries**

**Battles**

See also **Naval battles**; **War**

**Battleships.** See **Warships****Bauxite**

- Occurrence and origin of the bauxite deposits of Arkansas. W. J. Mead. *pls Econ Geol* 10:28-54 Ja '15

**Bay windows**

- Home instruction for sheet metal workers. W. Neuboecker. II *diag* *Metal Work* 84:171-3, 297-8, 423-4, 581-2, 702-4+ Ag 6, S 3, O 1, N 5, D 3 '15

**Bayberries**

- Myrtle wax of commerce. II *Sci Am* S 80:301 N 6 '15

**Beacons**

See also **Lighthouses**

**Beams.** See **Beams****Bearings**

- Automobile engine bearings. W. Betterton. *Illustrations* *Ag* 35:517-18 J, 549-51 Ap 14-21 '15  
 Babbit bearing mold. D. S. Maun. *diag* *Mach* 22:146-7 O '15  
 Babbit bearing mold. S. Sucram. *diag* *Mach* 21:682 Mr '15  
 Babbit spindle bearing. *diag* *Mach* 21:317-18 D '14  
 Bearing-babbling furnace. J. C. Donovan. II *Elec Ry J* 46:153 J1 24 '15  
 Bearing metal of high elastic limit. II *Eng M* 49:501-2 Ag '15  
 Bearing metals. *Metal Ind n s* 13:473-4 N '15  
 Bearings for electric motors. L. J. Adams. *Am Inst E* 19 Pro 34:2797-802 N '15  
 Bearings for shafts, etc. *diag* *Int Marine Eng* 19:567 D '14  
 Bound Brook and Nigrum oilless bearings. II *Textile World* 49:282-4 My '15  
 Chart for safe load on journal bearings. A. M. Bennett. *Mach* 21:321-2 D '14  
 Friction load of shaft bearings. *Elec W* 66:809-11 O 9 '15  
 Heating of generator bearings. *Elec R & W Elec'n* 66:78-9 Ja 9 '15  
 High speed bearings. C. Stoney. *Int Marine Eng* 19:570 D '14  
 Hot trailer bearings. *diag* *Ry Age* (Mech ed) 89:555-6 N '15  
 Hydraulic bearing-bronching machine. C. M. Peck. II *Elec Ry J* 46:191 J1 31 '15  
 Laws of lubrication of journal bearings. M. D. Hersey. *Am Soc M E J* 37:531-7; Discussion. 37:537-8 S '15  
 Lubrication of car journals. W. A. Clark. *Ry Age* (Mech ed) 89:19-20 Ja '15  
 Lubrication of journal bearings. *Iron Age* 96:25-6 J1 '15  
 Motor-bearing trimmer. J. L. Stephens. II *Elec Ry J* 46:111 J1 17 '15  
 Need of standard railroad car-bearing alloy. R. R. Clarke. *Foundry* 43:457-8 N '15  
 New machine for mucking wire mills. II *diag* *Iron Age* 95:792-3 Ap 8 '15  
 One-ball center bearing. J. S. Witt. *diag* *Elec Ry J* 46:770 O 9 '15  
 Rapid analysis of bearing metals and high-copper content alloys. C. G. Latta. *Met & Chem Eng* 13:346-7 Je '15  
 Rebabbling journal bearings. W. L. Fulton. II *diag* *Elec Ry J* 44:1305-6 D 12 '14  
 Setting up connecting-rod bearings. *Automobile* 33:242-3 Ag 5 '15

**Bearings—Continued**

Tri-city railway bearing practice. J; Sutherland. II Elec Ry J 45:844-5 My 15 '15  
Types of motor axle bearings—use of different types for each half. Elec Ry J 45:760 Ap 17 '15

See also Babbitt metal; Ball bearings; Lubrication and lubricants; Roller bearings

**Beaumont, Texas****Public works**

New marine terminals at Beaumont; abstracts. H. M. Harding. plan Eng N 73:1072-3 Jo 3 '15; Eng & Contr 43:sup28 My 19 '15; Eng Rec 71:721 Jo 5 '15; Int Marine Eng 20:299-300 J1 '15; Ry R 57:970-81 N 27 '15

**Bedplates.** See Machinery—Foundations

**Beer—yeast.** See Yeast

**Bees**

Bees in winter time. Sci Am 113:217 N 4 '16

**Beet sugar industry.** See Beets and beet sugar

**Beets and beet sugar**

Strontium in the beet sugar industry. H. C. Meyer. J Ind & Eng Chem 6:1036 D '14  
Sugar beet cultivation in England. Sci Am N 80:11 J1 3 '15

**Belgian Congo.** See Congo, Belgian

**Belgium**

Destruction of architectural monuments in Belgium. R. A. Crann. Am Inst Arch J 3:185-6 Ap '15

Report of a German commission upon the destruction of architectural monuments in Belgium. R. D. Kohn. Am Inst Arch J 3:130-2 Mr '15

**Defenses**

Defense of Belgium by inundation. P. Sallier. II map Sci Am N 79:166 Mr 13 '15

**Description**

Belgium and some of its buildings. J; Y. Dunlop. II Bldg Age 37:33-6 Ap '15

**Industries and resources**

Belgian car factories intact. W. F. Bradley. II map Automobile 32:295-101 Jo 21 '15  
Belgium's place in the industrial world. A. A. Snowdon. Am Ind 15:22-3 My '15  
Forests of Belgium. C; H. Whitaker. II Am For 21:22-23 Ja '15  
Manufacture of chicory. J. Boyer. II Sci Am N 80:440-2 J1 17 '15  
Production of Belgian industry is complete. D; E. Sussner. Iron Age 65:301-5 Ap 22 '15

**Social conditions**

Housing reform in Belgium. C; Aronovici. II Am Inst Arch J 2:568-72 D '14

**War relief**

World's largest soup kitchen. Sci Am 112:329 Ap 2 '15

**Bells**

Cross-section of bell founding arrangement. J; J. Schipper. diag Automobile 33:370 Ag 26 '15

**Bells, Electric.** See Electric bells

**Belting**

Belt driving. H. T. Miller. diag Engineer 119:296-7, 421-2 Ap 23-26 '15  
Belt shifter. II Ry Age (Mech ed) 89:512-4 O '15

Belting calculations. E. O. Waters. Power 41:543-4 Ap 20 '15

Centrifugal effect on belts. C; A. Hirschberg. II Power 40:927 D 29 '14

Conveyor-belt calculating chart. J. D. Mooney and D. L. Larnell. Am Inst Min E 101:105; 1937-9 N '15; Mine. Eng & Min J 100:562-3 O 2 '15; Mine. Met & Chem Eng 12:318 19 N 1 '15; Abstract. Am Soc M E J 37:410-11 O '15

Device for taking slack out of belts. II Iron Age 96:1240 N 25 '15

Driving belts. W; T. Matlick. Elec R & W Elec'n 67:973-4 N 27 '15

Effect of relative humidity on an oak tanned leather belt. W; W. Bird and F. W. Roys. II Am Soc M E J 37:447-9 Ag '15; Mine. Iron

Tr R 56:1315-17 Jo 21 '15; Same. Power 42:169-71 Ag 3 '15; Summary. Iron Age 96:26-7 J1 1 '15; Discussion. Am Soc M E J 37:149-51 Ag '15

Largest Lenix drive in the United States. II diag Power 42:230-1 Ag 17 '15

Leather belts at Panama Exposition. II plan Iron Age 95:564 Mr 11 '15

Lenix belt wrapper. II Eng M 49:supl 2 Ap '15

Lenix drive. II Eng M 49:supl 3 Ag '15

Manufacture of leather beltting. P; H. Small. Am Soc M E J 37:679-82 D '15

Pneumatic adjustable sheet metal guard for belts. diag Iron Age 96:973-4 O 28 '15

Metal Work 84:382 N 6 '15

Quarter-turn belt. W; E. Schaphorst. diag Power 42:556-6 O 19 '15

Rubber-belt data. Eng & Min J 98:1098 D 19 '14

Safety belt shifter. II Elec R & W Elec'n 67:635 O 2 '15; Power 42:608 N 2 '15; Ry Age (Mech ed) 89:597 N '15

Static electricity in a textile mill. W; T. East. diag Elec R & W Elec'n 66:230 Ag 7 '15

Study of belt drives. M. Sampson. Mach 71:805-6 Jo '15

See also Pulleys; Rope driving; Shifting

**Belting, Steel**

Steel-band power transmission, advantages over belt and rope shown in Germany. P; H. Brooker. Eng M 49:566 Ag '15

**Belting, Woven**

Finishing of beltting fabric. diag Textile World 19:381-2 S '15

**Benches, Concrete**

Concrete park bench. W; H. Conant. II diag Munic J 38:392-3 Ap 24 '15

**Benchmarks**

Granite bench marks on pipe. C; H. Adams. diag Eng N 31:115 M 1 '15

Improved method of setting bench mark for determining hydraulic slope in channels. II Eng & Contr 44:241 O 6 '15

New steel line monuments at Pittsburgh, Pa. diag Eng & Contr 44:241 Jo 3 '15

Procter level benchmarks. New York city. diag Eng N 71:277-8 D 10 '15

**Bending machines**

Bending bows for vehicle tops. II Bldg Am 111:511 D 14 '14

Curling roll with power loader. diag Ry Age 57:112-13 O 18 '14

Double-lever machine for bending rods. II Iron Age 94:194 Jo 10 '15

Improved motor driven pipe bending machine. II Elec W 62:125 Jo 9 '15

Machine bends six reinforcing bars at a time. II Eng Rec 71:214 F 13 '15

Machine makes anthracite pipe bends. II Automobile 37:552-3 Mr 7 '15

New hydraulic pipe bending machine. II Iron Age 95:291 F 4 '15

30-ton hydraulic pipe bender. II Int Marine Eng 19:278 Jo '15

**Benzaldehyde**

Action of chloral hydrate and benzaldehyde on the polyvinyl hydrochloride in the presence of aluminum chloride. II H. Frankfurter and W. Kitzchevsky. Am Chem Soc J 37:456-29 P '15

**Benzalhydantoin**

Reaction of hydroxylamine hydrochloride and identification of benzalhydantoin. T; H. Johnson and J. E. Baker. Am Chem Soc J 37:452-5 P '15

**Benzene**

Freezing point of benzene as a fixed point in thermometry. T; W. Richards and I. W. Shields. Am Chem Soc J 36:1279-12 3 '14

Interpretations of some stereochemical problems in terms of the electronic conception of positive and negative valence. II H. Pry. Am Chem Soc J 37:855-92 Ap 14

Substitution in the benzene nucleus. A. E. Hollomon. Am Chem Soc J 36:2496-5 10 '14

**Benzene, Substituted for**

Benzoic substitutor for safety lamps. Chemistry 36:255 J1 '15

**Benzidine hydrochloride**

Determination of sulfates in water by benzidine hydrochloride. F. W. Jirckmiller. *J Ind & Eng Chem* 7:600-2 *Jl* '15

**Benzine. See Benzene****Benzole acid**

Combustion calorimetry and the heats of combustion of cane sugar, benzoic acid, and naphthalene. H. C. Dickinson. *bibliog U S Bur Stand Bul* 11:189-257 *Mr* 1 '15

Mercurification of benzoic acid by mercaptans. L. S. Pratt and R. E. Reid. *diag Am Chem Soc J* 37:1934-48 *Ag* '15

Neutral ammonium salts of some substituted benzoic acids. L. McMaster and I. H. Godlove. *Am Chem Soc J* 37:2181-8 *S* '15

**Benzol**

Analysis and valuation of motor fuels—14 methods for examining them; from German data. *Automobile* 33:203-5, 247-9+ *Jl* 29-*Ag* 5 '15

Benzol as a fuel. *J Ind & Eng Chem* 7:73-4 *Ja* '15

Benzol for gasoline as motor fuel. *Sci Am* 113:354 *O* 23 '15

Combustion of benzol in internal combustion engines. E. Terres. *Am Soc M E J* 37:46-8 *Ja* '15

Determination of benzol in gas mixtures. G. A. Thurrell and L. W. Robertson. *diag J Ind & Eng Chem* 7:689-70 *Ag* '15; Same. *Am Gas Light J* 103:132-3 *Ag* 30 '15

Determining the benzol in gas. A. Krieger. *diag Am Gas Light J* 103:299-300 *My* 10 '15

Dr. Kitzman's gasoline process. *Sci Am* 112:248 *Mr* 13 '15

Driving tests with benzol and benzol-alcohol mixtures by Baron Von Loew. *Automobile* 33:709-11 *O* 14 '15

Efficient process of cracking. C. H. Claudy. *II Sci Am* 112:267 *Mr* 20 '15

Steel works benzol plants. *Iron Age* 95:703 *Mr* 25 '15

**Benzophenone chloride**

Triphenylmethyl; preparation of *p*-hydroxytriphenylmethyl and attempts to isolate the corresponding triarylmethyl. M. Gomberg and R. L. Jickling. *Am Chem Soc J* 37:2675-91 *N* '15

**Benzoyl chloride**

Benzoylations in ether solution. W. M. Dehn and A. A. Hall. *Am Chem Soc J* 36:2091-2101 *O* '14

**Benzoylparatolylhydrazine**

Constitution of the hydroxyazo compounds; the action of unsymmetrical benzoylparatolylhydrazine upon benzocubane and its homologs. W. McPherson and G. W. Stratton. *Am Chem Soc J* 37:906-15 *Ap* '15

**Benzylidene anthranilic acids**

Action of acetic anhydride on some benzylidene anthranilic acids. J. B. McKeley and C. E. Poe. *Am Chem Soc J* 37:582-6 *Mr* '15

**Berea college, Berea, Ky.**

Industrial education in the South. *II Indg Age* 37:61-2 *O* '15

**Beriberi**

Beriberi-preventing vitamins. W. P. Chaudhurn. *Sci Am* 113:379 *O* 30 '15

**Bermuda**

Bermuda's little trees. W. R. Brown. *II Am For* 21:186-97 *Mr* '15

**Bertillon system**

Passing of the Bertillon system of identification. R. B. Foadlek. *Sci Am* 80:330-1 *N* 20 '15

**Bessel functions**

Experimental researches on skin affect in conductors. A. B. Kennelly, E. A. Laws and P. H. Pierce. *bibliog II diag Am Inst* 10 *Pro* 34:1749-1814 *Ag* '15

**Bessemer process**

Heat energy from the Bessemer process. G. Butts. *Iron Age* 95:618-19 *Mr* 18 '15

*See also* Steel metallurgy

**Bevels**

Table of bevels. *Eng N* 73:639 *Ap* 1 '15

**Bible. Old Testament**

Medicine of the Old Testament. S. B. Hakely. *Sci Am* 80:70-1, 90 *Jl* 31-*Ag* 7 '15

**Bicycles**

*See also* Motor cycles

**Billerica, Massachusetts**

Billerica garden suburb. A. C. Comey. *II plan Eng N* 73:815 *Ap* 29 '15

**Bills and notes**

Notes receivable. S. Walton. *J Account* 19:313-17 *Ap* '15

Bills of exchange, Domestic. *See* Trade acceptances

Binding. *See* Bookbinding

**Bins, Steel**

Cleveland adopts steel coal and sand storage bins. *II diag Mee Ry J* 46:1001-2 *N* 13 '15

Biochemistry. *See* Biological chemistry

**Biological chemistry**

Biochemical systems and their function in the development of the organism. W. Bechterew. *Sci Am* 8 79:131 *F* 27 '15

*See also* Barfoed's test

**Biology**

*See also* Bacteriology; Cells; Enzymes; Parthenogenesis; Plankton; Variation (biology); Zoology

Biplanes. *See* Acroplanes

**Birch**

Use of native woods for interior finish. C. M. Price. *II Brick* 24:239-40 *O* '15

**Bird houses**

Building bird houses. N. Dearborn. *diag Am For* 21:660-9 *My* '15

Care of bird houses. N. Dearborn. *diag Am For* 21:682-5 *Ap* '15

**Birds**

Bird enemies of forest insects. W. J. McAtee. *II Am For* 21:681-91 *Jo* '15

Birds and the forests. A. A. Allen. *Am For* 21:845-6 *Ag* '15

First national bird census. *Sci Am* 112:243 *Mr* 13 '15

Our vanishing shore birds. A. A. Allen. *II Am For* 21:911-12 *S* '15

Value of birds to man. *Sci Am* 8 79:356 *Jo* 5 '15

*See also* Water birds

**Migration**

Departure of the birds. A. A. Allen. *II Am For* 21:977-80 *O* '15

Miracle of bird migration. W. W. Cooke. *Sci Am* 112:476-7 *My* 22 '15

**Birds, Fossil**

New light on the great toothed divers of America. R. W. Shufeldt. *II Sci Am* 8 79:52-3 *Ja* 23 '15

**Birds, Protection of**

Brookline protects birds. C. B. Floyd. *II Am For* 21:792-3 *Jl* '15

Conserving the waterfowl. A. A. Allen. *Am For* 21:1047-8 *N* '15

In defense of our feathered cosmopolites. *Sci Am* 113:316 *O* 9 '15

**Birkinbine, John, 1841-1915**

Sketch. R. W. Raymond. *por Am Inst Min* 10 *Bul* 103:437-42 *Jl* '15

**Birmingham, Alabama****Railroads**

New terminal for the Southern at Birmingham. *II diag Rty Age* 59:743-5 *O* 22 '15

**Bituminous materials**

Asphaltic materials for road construction. A. A. Berkowitz. *Eng & Contr* 42:161-3 *Ag* 12 '14; Same. *Munic Eng* 47:464-7 *D* '14

Colloids in relation to manipulation of structural materials. C. Richardson. *Munic Eng* 48:360-2 *Jo* '15

Determining the melting points of asphalts. J. C. Miller and P. P. Sharples. *Eng & Contr* 43:87-8 *Ja* 27 '15

Pavements with pitch filler. *II Munic J* 38:160-2 *F* 4 '15

Proposed standard terms for bituminous road materials. *Eng & Contr* 42:234-5 *H* 2 '14

Purchase of asphalt and asphaltic cement on the bituminous basis. W. J. Broadhurst. *Eng & Contr* 43:85-6 *Ja* 27 '15



**Blast furnaces—Continued**

Turbo blowers for blast-furnace blowing. *II*; *II*.  
*II*ce, *II* *II*lags Am Inst Min 10 Bul 89:721-43  
 My '14; Abstract. Am Soc M 13 J 36:0161-2  
 J1 '14; Discussion. Am Inst Min 10 Bul 100:  
 794-809 Ap '15  
 Wet ores in charcoal blast furnaces. *II*. *II*.  
 Lee, Met & Chem Eng 13:882 D 1 '15

See also Blast furnace gas; Blast furnace  
 stoves; Cast iron; Coke ovens; Cupola fur-  
 naces; Iron metallurgy; Slag; Slag settlers

**Charging**

Blast-furnace charging apparatus. F. C. Rob-  
 erts. *II*lags Iron Age 95:234-5 Ja 28 '15

Blast-furnace skips and transfer cars: an Eng-  
 lish installation of the eighteenth century.  
 F. C. Roberts. *II* *II*lag Iron Age 95:192-3 Ja  
 21 '15

Charge car at Midvale, Utah. *II* Eng & Min J  
 100:519-20 S 25 '15

Filling the blast furnace. J. B. Johnson, Jr. *II*  
*II*lags Met & Chem Eng 13:161-73, 227-33  
 M-Ap '15

Telfer furnace charging. N. Kapp. *II*lags Iron  
 Age 94:1388-9 D 17 '14

**Blast lamps**

Blast lamp for natural gas. *II*. C. Chapin. *II*  
 J Ind & Eng Chem 7:16-7 Ja '15

**Blast stoves.** See Blast furnace stoves**Blasting**

Ditch digging by blasting. F. W. Wilson. *II*  
 Eng & Contr 41:150 Ag 25 '15

Electric shot firing in Kansas. C. L. Carpenter.  
*II*lag Colliery 35:596-8 Ja '15

Electric shot firing in Oklahoma. Colliery 35:  
 408-9 Mr '15

Five-hole cut. Eng & Min J 99:1083 Jo 19 '15

Five-hole cut. *II*. A. Morrison. *II*lags Eng &  
 Min J 99:956 My 29 '15

Hints on loading drill holes. Eng & Min J  
 100:761 N 6 '15

How electric blasting saves. Eng & Min J 100:  
 802 N 13 '15

Largest blast on record. *II* map Eng N 73:1026-  
 7 My 27 '15

Mother Lode blast. F. S. Norcross, Jr. *II* Eng  
 & Min J 99:931-5 My 29 '15; Abstract. Eng  
 M 49:920-3 S '15

New electric blasting caps for wet work. Eng  
 & Min J 100:311 Ag 21 '15

New safety detonating fuse: Cordouan detonant.  
*II*. Souder. *II*lags Am Inst Min 10 Bul 91:  
 2517-56 O '14; Abstract. Eng M 48:416-18 D  
 '14; Abstract. Eng & Contr 42:462-3 N 11  
 '14; Discussion. Am Inst Min 10 Bul 100:  
 895-902 Ap '15

Pointers to avoid trouble with blasting fuse.  
 Eng Rec 72:178 Ag 7 '15

Primer on explosives for metal miners and  
 quarrymen. C. E. Munroe and C. Hall. *II*lags  
 Jls U S Bur Mines Bul 80:1-117 '15

Rock work in coal mines. *II*lags Colliery 35:  
 237-40 D '14

Safety methods used in handling explosives.  
*II* Eng N 73:1080-1 Jo 3 '15

Shot firing in coal mines by electric current  
 from the surface. C. S. Rice and H. H.  
 Clark. Am Inst Min 10 Bul 94:2563 71 O '14;  
 Discussion. 100:885-91 Ap '15

Use and abuse of fuse. Eng & Min J 100:  
 882-3 N 27 '15

**Blasting, Substitutes for.** See Hydraulic mining  
 cartridge**Bleaching**

Bleaching and finishing crepes. Textile World  
 49:121-2 Ap '15

Bleaching artificial silk. Textile World 48:506 F  
 '15

Bleaching knit goods. Textile World 48:409 Ja  
 '15

Bleaching of cotton and linen mixed goods.  
 Textile World 49:551-2 Ag '15

Blue spots on knit goods. Textile World 48:507  
 F '15

Improved bleaching process. Textile World 49:  
 682-4 S '15

Improved high pressure boiling digger. *II* *II*lag  
 Textile World 48:427-8 Ja '15

Improved process of bleaching. Textile World  
 50:229-30 N '15

Kanbara earth and its bleaching action on  
 oils. S. Ueno. *II*lags J Ind & Eng Chem 7:  
 898-900 J1 '15

Kuehn bleaching apparatus for cotton. *II*lag  
 Textile World 48:623-4 Mr '15

Thies system of bleaching piece goods. *II*lag  
 Textile World 48:620-1 Mr '15

See also Cleaning; Dyes and dyeing

**Blind**

See also Optophone; Phonopticon

**Printing and writing systems**

Printing for the blind. Sci Am S 79:247 Ap  
 17 '15

**Block signals.** See Railroads—Signals**Blockade**

Blockade by submarine. Sci Am 112:376 Ap  
 24 '15

**Blood**

Ninhydrin reaction in relation to the age and  
 habits of individuals. J. Takamine, Jr. Am  
 Chem Soc J 37:916-9 Ap '15

**Analysis**

Nephelometric estimation of purine bases, in-  
 cluding uric acid, in urine and blood. S. S.  
 Graves and P. A. Kohler. Am Chem Soc J  
 37:2439-47 O '15

**Blooming mills.** See Rolling mills**Bloomington, Indiana****Sewerage**

Sewage disposal at Bloomington; abstract. U.  
 S. Hanna. Munic J 37:883-4 D 17 '14

**Blotters**

Printers' blotters. Inland Pkr 55:784a-784h S  
 '15

**Blower systems**

Blower systems for heating and ventilating  
 and stock and refuse conveying systems:  
 committee report. A. M. Feldman. *II*lags Am  
 Soc Heat & V 12 20:412-20 '15

Four-prong fork for pipe of blower system.  
*II*lags Metal Work 83:811-12-4 Ja 4 '15

Removing acid fumes by blower system  
 method. W. B. Piper. *II*lag Metal Work 84:  
 682-3 N 26 '15

Theory and practice in warm-air heating.  
*II*lags Metal Work 84:451-3 O 8 '15

**Blowers**

Advantages and disadvantages of various  
 types of blowers for cupola work. Am Soc  
 M 13 J 37:227-8 Ap '15

Shades of two blowers break. W. A. Dunkley.  
*II* Power 42:694 N 16 '15

Choosing air compressors for activated-sludge  
 tanks. C. H. Nordell. Eng N 74:961-6 N 4 '15

Efficiency of the blast furnace operation.  
*II*. F. Hurman. Met & Chem Eng 13:624-9 S  
 15 '15

Forced draft. Colliery 35:502-3, 550-60 Ap-May  
 '15

Gas blowing engines at the Steelton plant of  
 the Pennsylvania steel company. *II* Met &  
 Chem Eng 13:516-19 Ag '15

Gas blowing engines for the Pennsylvania  
 steel co. *II* Iron Age 96:12-11 J1 '15

Gas blowing engines for the Pennsylvania  
 steel co. *II* Iron Tr 12 57:33-5-4; J1 '15

High-speed blowers and compressors. *II* Iron  
 Age 96:136-7 J1 '15

Methods and facilities for specifying and test-  
 ing blowers also measuring air and steam  
 supply to the water gas generators. J. M.  
 Spitznagel. Am Gas Ind Pro 9:pt 1, 615-66;  
 Discussion. 9:pt 1, 666-77 '14

Modern gas-power blower stations. A. West.  
*II*lags Am Inst Min 10 Bul 102:1205-13 Jo  
 '15; Abstract. Am Soc M 13 J 37:113 J1 '15

New Schlotter blower. A. Gradenwitz. *II*  
 Power 41:261-2 F 23 '15

Notes on fans. A. A. Potter and S. L. Sim-  
 mering. Power 41:816 Jo 15 '15

Remote control of gas blower. W. A. Dunkley.  
*II*lag Power 42:558 O 19 '15

Root blowers as adapted for use on economiz-  
 ers. *II*lag Power 42:194-5 Ag 19 '15

Tests of land and mechanical root blowers.  
 A. W. Conklin. *II*lag Power 42:48-50 J1 13 '15

Turbo-blower for the blast furnace; abstract.  
 F. C. Cutler. Ind Eng 14:439-40 N '14

Turbo-blower governing device; abstract.  
 A. Stodola. *II*lags Am Soc M 13 J 37:181-2  
 Mr '15



**Blowers—Continued**

- Turbo-blowers and turbo-compressors. O. H. Wunderlich. *Power* 42:280 Ag 21 '15  
 Turbo blowers for blast-furnace blowing. R. H. Rice. *Iron* 95:143-4 F 25 '15  
 Rice, H. *Iron* 95:143-4 F 25 '15  
 My '14; Abstract. *Am Soc M E J* 36:501-2 J1 '14; Discussion. *Am Inst Min E Bul* 100: 794-809 Ap '15

See also Blast furnaces

**Blowoff tanks**

- Blow-off tank and its connections. J. Graham. *Eng Dom Eng* 72:223 Ag 21 '15  
 Concrete blowoff basin. A. D. Williams. *Eng Power* 41:373-4 Mr 15 '15  
 How the blow-off water from boilers may be cooled before discharge into sewer. T. W. Reynolds. *plan Eng* W 66:592 S 11 '15

**Blowpipes**

- Quantitative blowpiping as an aid to the prospector. S. Fischer. *Jr. diges Met & Chem Eng* 12:693-5, 771-5 N-D '14

**Blueprinting machinery**

- Blueprint drying and ironing machine. *Iron* 95:143-4 F 25 '15  
 New continuous blueprinting machine. *Iron* 95:614 Mr 18 '15  
 Swinging blueprint frame is cheap and efficient. F. W. Salmon. *diag Eng Rec* 72:100-1 J1 24 '15

**Blueprints**

- Efficient use for surplus blueprints. F. H. Jones. *Eng Rec* 70:972-3 D 19 '14  
 Efficient use of surplus blueprints. L. R. W. Allison. *Eng Rec* 71:388 Ju 16 '15  
 How to make blueprints from opaque originals. *Eng & Min J* 100:309 Ag 21 '15

Board of mediation and conciliation. See United States—Board of mediation and conciliation

Boards of health. See Health boards

Boards of trade. See Chambers of commerce

**Boats**

- Drill boat lifts itself out of the water to escape waves. W. B. Macdonald. *Iron* 95:143-4 F 25 '15

See also Barges; Dredges; Flybuys; boats; Hydroplanes; Lifeboats; Motor boats; Scoops; Ships; Submarine boats; Torpedo boats; Towboats; Yachts

**Boiler accidents**

- Gas explosions in boiler furnaces. *diag Power* 41:553-4, 651-3, 719, 750-5 Ap 20, Mx 11, 25, 30 8 '15  
 Gas explosions in boilers. R. Trautschold. *Power* 42:250-2 S 9 '15  
 Gas explosions in flange fired boiler plants. abstract. P. M. Greppe. *Am Soc M E J* 37: 255 Ap '15  
 Increase in safety of boiler operation in France. abstract. H. Hilliger. *Am Soc M E J* 37: 608-9 O '15; Same. *Power* 42:773 S 30 '15

See also Boiler explosions

**Boiler cleaning**

- American railway master mechanic's association; report of the committee on boiler washing. *Ry R* 56:851-3 Jo 19 '15  
 Boiler washing and filling system for small roundhouses. W. Wells. *plan Ry Age* (Mech ed) 89:251-2 Mx '15  
 Clean boilers and tight joints another source of economy. Old Scotch. *Int Marine Eng* 19: 551 D '14  
 Core sand in the heating system. *Locomotive* 30:110-12 O '14  
 Economy of coal and boiler extension. G. J. Meyer. *Int Marine Eng* 30:174 G Ap '15  
 Graphite in boilers. W. Wenner. *Power* 41:131-2 Jo 28 '15  
 Results with mechanical sand blowers on boilers. A. J. Fisher. *Power* 42:314 Ag 21 '15  
 Schutte & Koerting sand conveyor. *diag Power* 41:378 Jo 20 '15  
 Sand blowers as adapted for use on locomotives. *diag Power* 42:184-5 Ag 19 '15  
 Tests of hand and mechanical sand blowers. A. W. Conklin. *diag Power* 42:348-50 J1 13 '15  
 Vulcan vertical water-tube boiler cleaner. *diag Power* 42:323 Ag 17 '15  
 Y-fitting for washing out boilers. P. H. McIntosh. *Ry Age* (Mech ed) 89:530 O '15

Boiler corrosion. See Boilers—Corrosion

**Boiler explosions**

- Accident to a boiler fired with producer gas. *Am Soc M E J* 37:416 P '15  
 Boiler accidents in France in 1912. *Am Soc M E J* 37:410-1 J1 '15  
 Boiler explosion at Menlo, Iowa. S. Kirlin. *Iron* 95:143-4 F 25 '15  
 Boiler explosion in milling plant. Columbus. Kan. J. R. Hamilton. *diag Power* 42:236-7 Ag 21 '15  
 Boiler explosions. *Eng W* 66:592 S 11 '15  
 Boiler explosions. See quarterly numbers of the *Locomotive*  
 Boiler explosions during first half of 1914. *Power* 41:110-1 Jo 26 '15  
 Boiler explosions during second half of 1914; table. *Power* 42:263-6 J1 13 '15  
 Boiler explosions in Great Britain. *Locomotive* 30:120-2 O '14  
 Boiler failures and what the American society of mechanical engineers is doing to prevent them. R. R. Polk. *Asian Eng* 70: 36-7 J1 '15. Same. *Am Soc M E J* 37:409-11 J1 '15  
 Confirmation of the Colburn Clark theory of boiler explosions. *Locomotive* 30:162-4 Ap '15; Same. *Power* 42:357-2 P 7 '15  
 Explosion of a locomotive boiler. abstract. Muller. *diag Am Soc M E J* 37: 3-4 Ap '15  
 Explosion of steam drum of R. & W. boiler at Shinnokin, Penn. *diag Power* 41: 333 N 23 '15  
 Hazard of the domestic hot water boiler. *Locomotive* 30:113-4 J1 '15  
 Steam boiler explosion. W. H. Boston. *diag Locomotive* 30:223 G Ag '15  
 Two years of boiler explosion report. *Power* 42:251 J1 13 '15  
 Unprecedented accident to a torpedo boat destroyer. The *Aspin*. *diag Am* 11: 1 Jo 16 '15  
 Year's boiler explosion. Annual report of the marine department of the board of trade for the year ending June 30, 1914. *Power* 41:551-4 Ap 13 '15

See also Boiler accidents

Boiler feeding. See Feed water

**Boiler heads**

- Convex and concave design. A. C. Homan. *Power* 41:50 Mx 10 '15  
 Formulas for balanced heads. *Power* 41:267 P 9 '15  
 Stresses in convex heads. L. F. Conck. *diag Power* 42:675-6 S 9 '15  
 Stresses in convex heads. L. F. Conck. *Power* 41:264 Jo 17 '15  
 Stresses in convex heads. H. J. Vander Loh. *Power* 40: 15-18 Jo 8 '14

**Boiler inspection**

- Boiler inspection. *Iron* 95:143-4 F 25 '15  
 Boiler inspection by rail. *diag Power* 41: 131-2 Jo 28 '15  
 Boiler inspection. H. J. Vander Loh. *Am Soc M E J* 37: 229-1 Jo 15 '15  
 First annual inspection of boilers. *Power* 41: 255 Ap '15  
 Federal government of boiler inspection report. *Ry Age* 41:396-7 Jo 27 '14  
 Hartford inspection service during 1914. *Locomotive* 30:177-9 Ap '15  
 Model boiler inspection and chapter 1. *Locomotive* 30:177-9 Ap '15  
 New inspection method. *diag Locomotive* 30:98-102 O '14  
 Report of the chief inspection of locomotive boilers. E. McManus. *Ry R* 56: 19 Jo 2 '15  
 Results of the locomotive boiler inspection law. P. McManus. *Ry Age* 41:392 Mx 19 '15. Same cont. *Ry Age* (Mech ed) 89:190-1 Ap '15. Same cont. *Power* 41:695-6 Jo 20 '15  
 Steam boiler construction and inspection. H. A. Humphreys. *Power* 39: 69-7 Jo 11 '14. Abstract. *Eng & Const* 4: 116-4 Ap 19 '14  
 Visits of inspection. Brown. *diag Locomotive* 30:177-9 Ap '15

Boiler joints. See Boilers—Joints

Boiler law. See Boilers—Laws and regulations

Boiler makers' association. Master. See Master boiler makers' association

**Boiler plants**

- Air intake increase. *diag Power* 41: 131-2 Jo 28 '15

**Boiler plants—Continued**

- Boiler plant of the Bessemer coal and coke company; using as fuel a mixture of coal and slate. W. O. Rogers. *Il diag* plan *Power* 41:798-801 *Jo* 15 '15
- Boiler plant of Union brewery, St. Louis. T. Wilson. *Il plans* *Power* 41:662-5 *My* 18 '15
- Boiler-room practices in Europe and this country; abstract with discussion. W. A. Blonck. *diag* *Mec* *W* 65:481-2 *F* 20 '15
- Cost of steam. C. W. Howard. *Power* 41:373 *F* 23 '15
- Cost of steam. H. L. Strong. *Power* 41:133 *Ja* 26 '15
- Economical boiler-house design. R. D. DeWolf. *Eng* *M* 49:837-42 *S* '15
- Experience in an isolated plant. E. T. Binns. *Power* 41:680 *My* 18 '15
- Gas burners in 2750-hp. office-building boiler plant. *Il diag* *Power* 42:79-80 *Jo* 20 '15
- How to increase steam production. H. R. Callaway. *Eng* *M* 49:843-9 *S* '15
- Increased the capacity of the plant. B. M. Babcock. *Power* 41:685-6 *My* 18 '15
- Keeping track of plant operation at the Cleveland municipal plant. A. D. Williams. *Il* *Power* 41:292-4 *Mr* 2 '15
- Lights in the boiler room. J. C. Hawkins. *plan* *Power* 42:591 *O* 26 '15
- Reconstructing existing plants. O. Monnett. *diag* *Power* 40:920-2 *D* 29 '14
- Steam costs in 6500-hp. boiler plant. F. G. Philo. *Power* 41:368-9 *Mr* 16 '15
- Steam-generating methods. Cleveland municipal plant. A. D. Williams. *Il* *Power* 41:631-3 *My* 11 '15
- Warren state hospital power plant. W. O. Rogers. *Il* *diag* *plan* *Power* 42:364-5, 408-12 *S* 14-21 '15
- Washington avenue power plant, Scranton, Penn. W. O. Rogers. *Il* *diag* *Power* 41:863-76 *Jo* 29 '15

See also *Boilers*; *Steam plants*

**Boiler plates**

- Brittleness of wrought iron as a consequence of heating compressed material; abstract. R. Baumann. *diag* *Am Soc M* 13 *J* 37:605-6 *O* '15
- Convenient form of plate caliper. *Locomotive* 30:159-70 *Ap* '15
- Tests on the diagonal strength of boiler plate. J. W. R. Macdonald. *Power* 41:779-80 *Jo* 8 '15
- Thick boiler plates. S. F. Jeter. *diag* *Power* 40:884-5 *D* 22 '14
- Thick boiler plates. T. Grimes. *Power* 40:133 *Ja* 26 '15
- Tom Hunter, hoisting engineer. W. O. Rogers. *Il* *diag* *Power* 42:678-80 *N* 16 '15

**Boiler scale**

- Boiler corrosion and scale to be ended by the use of electricity. *Sci Am S* 80:273 *O* 23 '15
- Mechanical scale preventer. *Il* *Power* 40:835 *D* 15 '14
- Prevention of boiler scale and corrosion. A. H. Babcock. *Mec* *W* 65:114 *Ja* 9 '15

**Boiler setting. See Boilers—Setting****Boiler tubes**

- Boiler tubes have tendency to spring upward. J. C. Hawkins. *diag* *Power* 42:452 *S* 28 '15
- Deformation of boiler tubes. T. R. Tarn. *diag* *Power* 42:656-7 *N* 9 '15
- Electric process for auto-eroding tubes. L. R. Pomerooy. *diag* *Ry Ago* (*Mech* ed) 89:469-70 *S* '15
- Flue welding. R. J. Hawkins. *Ry Ago* (*Mech* ed) 89:471 *S* '15
- Flue system of boiler tube replacement; abstract. *diag* *Am Soc M* 13 *J* 37:480-1 *Ag* '15
- Repairing locomotive boiler tubes. N. H. Ash-nolth. *Il* *plans* *Ry Ago* (*Mech* ed) 89:83-5 *F* '15
- Retubing tubular and water-tube boilers. J. C. Hawkins. *diag* *Power* 41:330-2 *Mr* 9 '15
- Specifications for lap-welded and seamless boiler tubes. *Iron Ago* 84:1418-19 *D* 17 '14
- Using old boiler tubes as pipe. J. P. Nolan. *Il* *diag* *Ry Ago* (*Mech* ed) 89:192 *Ap* '15
- Visits of inspector Brown. J. M. Torman. *Power* 42:648-9 *N* 9 '15

**Specifications**

- Boiler tube specifications. *diag* *Iron Tr R* 57: 47-8 *Jo* 1 '15

**Boilers**

- American society of mechanical engineers: discussion of the boiler report. *Am Soc M* 13 *J* 37:41-3 *Ja* '15; *Mec* *W* 65:114-15 *Ja* 9 '15
- Boiler capacity for steam curing. *Concrete Cem* 7:185-6 *N* '15
- Boiler-control boards at Delray. N. G. Reinbecker. *Il* *Power* 42:435-6 *S* 28 '15
- Boiler practice of 1915. A. D. Pratt. *diag* *Mec* *W* 66:690-1 *S* 25 '15
- Boilers for isolated plants. C. L. Hubbard. *Power* 41:232-4 *F* 15 '15
- Cleaning fires under boilers. *diag* *Mec* *W* 65: 731-5 *Mr* 20 '15
- Corrugated furnaces for vertical fire-tube boilers. F. W. Dean. *diag* *Power* 42:103 *Jo* 20 '15
- Defender boiler-room appliances. *Il* *Power* 41: 609 *My* 4 '15
- Draft in furnaces and flues. R. G. Bailey. *diag* *Power* 42:638-42 *N* 9 '15
- Economizing zinc. H. de B. Parsons. *Sci Am S* 80:224 *O* 2 '15
- Eddy rings in fire-tube boilers. *Am Soc M* 13 *J* 37:117 *F* '15
- Feeding graphite to boilers. C. N. Wiley. *diag* *Power* 41:616-17 *My* 4 '15
- Gas fired boilers. Herr Harkholz. *Am Gas Light* *J* 102:99-101 *F* 15 '15
- German progress in steam boiler firing; abstract. *Prudel*. *Am Soc M* 13 *J* 37:235-6 *Ap* '15
- Hand firing soft coal under power-plant boilers. H. Krosinger. *diag* *U S Bur Mines Tech* *Pa* 80:1-77 '15; *Abstract*. *Am Gas Light* *J* 102:139-40 *Mr* 1 '15
- Increasing boiler capacity. J. Harrington. *diag* *Power* 41:739-40 *Jo* 1 '15
- Influence of altitude on boilers. J. D. Skinner. *Power* 42:248-9 *Ag* 17 '15
- Lagging furnace walls to stop heat loss. *Mec* *W* 65:1049-50 *Ap* 24 '15
- Multiple-unit boiler control. R. F. Fisher. *diag* *Power* 42:378-80 *S* 14 '15
- Newport boilers. *Il* *Metal Work* 84:257 *Ag* 20 '15
- Nine-foot return-tubular boiler. *Il* *Power* 41: 431-2 *Mr* 30 '15
- Performance of a cylinder catcher. M. Van Valkenburgh and M. H. Isenberg. *plan* *Power* 40: 918-19 *D* 29 '14
- Poor circulation in boilers. *diag* *Int Marine Eng* 20:318-19 *Jo* 1 '15
- Problems in burning powdered coal. A. M. Mann. *Il* *diag* *Gen Mec* *Il* 18:959-65 *O* '15
- Pulverized coal for steam making. F. R. Low. *diag* *Power* 40:35-6 *Jo* 7 '14; *Same*. *Am Soc M* 13 *J* 30:346-52 *O* '14; *Same* cond. *Ind Eng* 14:333-6 *Ag* '14; *Abstract*. *Colliery* 35:530-2 *My* '15
- Recording power plant operations. J. C. Smallwood. *Il* *diag* *Eng* *M* 50:33-45 *O* '15
- Relation between quality of steam and load on the boiler in the case of a Cornish boiler; abstract. *Am Soc M* 13 *J* 37:185 *Mr* '15
- Results of changes in boiler furnace. M. B. Smith. *diag* *Power* 41:92-3 *Ja* 19 '15
- Return-tubular boiler furnace development. O. Monnett. *diag* *Power* 40:93-4 *Jo* 21 '14; *Same*. *Sci Am S* 78:394-5 *D* 19 '14
- Reverberatory waste-heat boilers. L. Duncan. *Il* *diag* *Eng* & *Min* *J* 99:152-3 *Ja* 16 '15
- Similar features of boiler and refrigeration systems. T. C. Thurston. *Power* 42:437-8 *S* 28 '15
- Steam-boiler construction and inspection. H. A. Baumhart. *Power* 39:900-1 *Jo* 23 '14; *Abstract*. *Eng & Contr* 42:178-9 *Ar* 19 '11
- Steam boiler economy in factories. W. Kent. *Ind Eng* 15:22 *Ja* '15
- Steam boiler of 1915. A. D. Pratt. *diag* *Power* 42:661-7 *N* 9 '15
- Study of draft in boilers. C. F. Hirschfeld. *diag* *Power* 42:196-7 *Ag* 10 '15
- Unaccounted-for loss. S. U. Tinspin. *Mec* *W* 65:1306-7 *My* 22 '15
- Use of corrugated furnaces for vertical fire tube boilers; with discussion. F. W. Dean. *diag* *Am Soc M* 13 *J* 37:445-6 *Ag* '15
- Valve requirements of boilers. T. W. Key-nolds. *plans* *Mec* *W* 66:976-8 *O* 30 '15

**Boilers--Continued**

- Washing and laying up boilers. J. E. Noble, Power 42:451-9 S 28 '15  
 Washing and laying up boilers for the summer. J. C. Hawkins, Power 43:377 Ag 24 '16  
 Waste-heat boilers. O. Monnett, dings Power 41:106-7 F 9 '15; Same, Eng & Min J 99:368-9 F 20 '15  
 Waste-heat boilers at Chrome, N. J. C. L. Brower, II dings Eng & Min J 99:892-5 My 23 '15  
 Waste-heat boilers in steel plants; abstracts. C. J. Bacon, dings Iron Age 95:1549-52 Je 17 '15; Iron Tr R 56:1123-4 Je 3 '15; Power 42:27-8 J1 6 '15  
 Why's of boiler draft. C. F. Hirschfeld, dings Power 41:675-9 My 18 '15  
*See also* Blowoff tanks; Boiler cleaning; Boiler explosions; Boiler inspection; Boiler plants; Feed water; Firing; Fuel economy; Furnaces; Grates; Locomotive boilers; Safety valves; Steam engines; Stokers; Mechanical; Water gauges

**Corrosion**

- Boiler corrosion and scale to be ended by the use of electricity. Sci Am S 80:272 O 23 '15  
 Economy of coal and boiler corrosion. G. J. Meyers, Int Marine Eng 20:175 6 Ap '15  
 Interesting case of boiler corrosion. F. Killian, dings Int Marine Eng 19:561-3 D '14  
 Notes on boiler operation. C. E. Stromeyer, Power 42:628-9 N 2 '15  
 Preventing corrosion from electrolytic action. Power 41:740 Je 1 '15  
 Unexploded boiler. A. Suzuki, II Int Marine Eng 20:273-4 Je '15

**Electric heating**

- High-voltage alternating-current boilers. II Elec W 65:430-1 F 13 '15

**Feeding**

Sea Feed water

**Heads**

Sea Boiler heads

**Joints**

- Ratio of circumferential to longitudinal stresses in boiler joints. J. K. Lamberhurst, Power 41:611-12 My 4 '15  
 Strength of diagonal joints. J. E. Terman, dings Power 41:296 7 Mr 2 '15

**Laws and regulations**

- A. S. M. E. boiler code, Locomotive 39: 175-7 Ap '15  
 A. S. M. E. boiler code approved by council. Power 41:268-70 F 23 '15  
 A. S. M. E. code, Iron Age 96:28 9 J1 1 '15  
 Boiler code of the A. S. M. E., R. C. Carpenter, Railway J 29:179 83 Mr '15  
 Boiler industry needs uniformity. Iron Tr R 56:1301 Je 24 '15  
 Digest of boiler laws of states of the United States. Power 42:sup J1 27 '15  
 Lack of synchronism in check-valve action. S. F. Jeter, dings Power 41:48 Ju 12 '15  
 Massachusetts board of boiler rules hearing. Power 42:702 N 16 '15  
 Model boiler and engineers' license law references. Power 42:166-8 Ag 3 '15  
 Model boiler-inspection and engineers' license law. Power 42:82-3 J1 20 '15  
 Progress on the report of the boiler committee of the Am. Soc. M. E. J. Am Soc M E J 37:xi-xiii F '15  
 Promulgation of the boiler code by the American uniform boiler law society. Am Soc M E J 37:ix-xx F '15  
 Safety first in the power plant. Power 40:813-14 D 8 '14  
 Standard boiler code approved. Elec Ry J 43: 377-8 F 20 '15  
 Steam-boiler law proposed by the Mechanical engineers' committee. Eng N 72:1178-9 D 10 '14

**Rating**

- Archule boiler horsepower. Power 41:167-8 F 2 '15  
 Heating surface a measure of steaming ability. Elec W 65:530 Ap 10 '15

- Limiting factors in forcing boilers above rating. T. Maynz, dings Power 42:669 12 N 2 '15  
 Rational units for the boiler room. H. G. Stott, Elec Ry J 43:168 Ag 6 '15  
 Table of boiler heating surface and horsepower. Locomotive 39:118 20 J1 '14

**Repair**

- How a water-tube boiler was repaired by an electric weld. A. C. Lacher, Elec W 66:1 10 S 8 N 21 '15  
 Repairing flame bridges. L. D. & W. Fowler, R. A. Brownell, dings Power 42:26 J1 6 '15  
 Repairing to a Babcock and Wilcox boiler. F. H. Sadler, dings Int Marine Eng 20:319 20 J1 '15  
 Retubing tubular and water-tube boiler. J. C. Hawkins, dings Power 41:232 1 Mr 2 '15  
 Value of inspector Brown J. E. Brown, dings Power 42:100 1, 880 2 S 23, 4 26 '15

**Safety devices and measures**

- Calculation of dimensions of safety valves with high lift. Ab 1:691, 696 App Jan M 1 J 37:181 Ag '15  
 In case of emergency, water cooled. H. H. Peabody, II Power 42:666 6 N 1 '15  
 Invention of double tin boiler. J. E. K. Burgess and J. D. Moore, II Metal Ind N 13 231 Ag '15  
 Tech Ind 31 13, 14, Same cond. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 App 36 1663 13 21 '15, Am Soc M E J 10:57 9 J1 1 '15, App Jan M 1 J 37:181 Ag '15  
 Invention of double tin boiler. J. E. K. Burgess and J. D. Moore, II Metal Ind N 13 231 Ag '15  
 Tech Ind 31 13, 14, Same cond. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 App 36 1663 13 21 '15, Am Soc M E J 10:57 9 J1 1 '15, App Jan M 1 J 37:181 Ag '15  
 Note on boiler operation. C. E. Stromeyer, Power 42:628-9 N 2 '15  
 Plan for automatic safety valve. Power 42:628-9 N 2 '15  
 Safety low water alarm. J. H. A. 10 14 16 19 '15  
 Sudden loading of boiler in case of low water. R. C. Lachner, Power 41:666 6 N 16 '15

**Setting**

- Photoelectric boiler setting. W. A. H. 10 14 16 19 '15  
 Power 42:628-9 N 2 '15  
 Boiler boiler setting. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 Hanger boiler for horizontal tubular boiler. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 Handing for the boiler setting. C. E. Stromeyer, Power 42:628-9 N 2 '15  
 Invention of double tin boiler. J. E. K. Burgess and J. D. Moore, II Metal Ind N 13 231 Ag '15  
 Tech Ind 31 13, 14, Same cond. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 App 36 1663 13 21 '15, Am Soc M E J 10:57 9 J1 1 '15, App Jan M 1 J 37:181 Ag '15  
 New setting for Worthington boiler. J. H. A. 10 14 16 19 '15  
 Reconditioning existing plants. C. E. Stromeyer, dings Power 42:628-9 N 2 '15  
 Reconditioning water-tube boiler. J. H. A. 10 14 16 19 '15  
 Setting for horizontal tubular boiler. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 Special reconditioning plant. C. E. Stromeyer, dings Power 42:628-9 N 2 '15  
 Supporting horizontal tubular boiler. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 Supporting horizontal tubular boiler. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15

**Specifications**

- Boiler failure, and what the American society of mechanical engineers is doing to prevent them. R. H. Davis, Am Soc M E J 37:12 18 11 '15, Same, Am Soc M E J 37:12 18 11 '15  
 Boiler steel specifications. Iron Age 96:1 11 '15

**Testing**

- Air excess in boiler furnace practice. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 Boiler efficiency. R. H. Davis, Am Soc M E J 37:12 18 11 '15  
 Boiler tests at American Institute of Mechanical Engineers. J. E. K. Burgess, Chem 1:24 9 11 Ag 11 '15  
 Boiler tests at various points. T. Maynz, dings Power 42:669 12 N 2 '15  
 Boiler tests of various kinds. T. Maynz, dings Power 42:669 12 N 2 '15

**Boilers—Testing—Continued**

- Boiler tests at various loads. V. J. Azbe. Power 42:421 S 21 '15
- Comparative tests of stoker- and hand-fired boilers. H. S. Knowlton. II Power 41:300-1 Mr 2 '15
- Power plant of the government printing office. D. H. Tuck. Power 41:578-9 Ap 27 '15
- Power plant testing. W. M. Selvooy. diags Inst 10 J 53:110-13; Discussion. 53:118-45 Ja 1 '15
- Practical man's boiler test. Power 41:168 F 2 '15
- Problems of furnace and boiler economy. A. L. Westcott. diag chart Elec W 66:583-8 S 11 '15
- Simplifying reports of boiler tests. W. Kent; H. D. Fisher. Power 40:852-4 D 15 '14
- Study of boiler losses. A. P. Krutz. II diags III II Eng Exp Sta Bul 78:1-72 '15; Abstract. Am Soc M 10 J 37:491 Ag '15; Excerpts. Power 42:766-9 N 30 '15
- Superheat in vertical fire-tube boilers. S. P. Stewart. Power 42:582-8 O 26 '15
- Test of down-draft sectional boiler. C. A. Fuller. Metal Work 83:282-3 F 10 '15; Same. Dom Eng 71:64-5 Ap 17 '15
- Test of the radial stays between the combustion chamber and the shell of a marine type boiler. diags Locomotive 30:102-10 O '14
- Testing the largest cast-iron boiler in the world. II diags Metal Work 83:388-9 Mr 12 '15
- Tests on a recent type of chain grate stoker and new method of balling Stirling boilers. J. A. Hunter. diags Eng Soc W Pa 31:1-10; Discussion. 31:10-55 F '15; Abstract. Am Soc M 10 J 37:348-51 Je '15
- Utilization of blast furnace gas. A. N. Diehl. Iron Tr R 57:1040-2 L N 25 '15
- Visits of Inspector Brown. J. B. Terman. Power 42:710-11 N 23 '15
- Warren state hospital power plant. W. O. Rogers. Power 42:411-12 S 21 '15
- Washington avenue power plant, Scranton, Penn. W. O. Rogers. Power 41:872 Je 29 '15
- Wood and coal as fuel for steam boilers. H. B. Reynolds. tables Sibley J 30:14-20 O '15

See also Blue gas

**Boilers, Heating**

- Boiler ratings and chimney sizes. H. R. Pierce. Dom Eng 69:301-2 D 5 '14
- Briquets as fuel for house heating boilers. D. T. Randall. II Metal Work 83:847-9 Jo 11 '15
- Heating boiler and the master workman. C. S. Dow. Metal Work 83:261-2 F 12 '15
- How boiler and greenhouse parts are molded. E. C. Kreutzberg. II plan Foundry 43:249-57 J '15
- Melting gas boilers for steam and hot water heating. II Dom Eng 73:214 N 13 '15
- New magazine feed boiler. II Heat & Ven 12:46-8 J '15
- Rules for construction of heating boilers. Dom Eng 71:215-17 My 22 '15
- Selection of boilers for heating plants. A. F. Lowndes. Metal Work 83:131-4 Ja 15 '15
- Smoke abatement in house heating boilers. M. A. Rooney. II Heat & Ven 12:17-20 O '15
- Space requirements for boilers of various types in school buildings. T. W. Reynolds. diags Heat & Ven 12:17-19 J '15
- Test of cast-iron downdraft boiler. C. A. Fuller. Dom Eng 71:64-5 Ap 17 '15; Same. Metal Work 83:282-3 F 10 '15
- Testing house heating boilers and checking manufacturers' ratings. I. N. Evans. Heat & Ven 12:50-1 Jo '15
- Testing the largest cast-iron boiler in the world. II diags Metal Work 83:388-9 Mr 12 '15
- Thermal tests of heating boilers at the Institute of thermal research, Buffalo, New York. II Am Soc Heat & V 10 20:220-6 '14
- Uniform method for testing house heating boilers: report of committee. Am Soc Heat & V 10 20:197-203 '14; Same. Metal Work 83:730-40 D 4 '14; Discussion. Am Soc Heat & V 10 20:203-9 '14
- Unsteady water line in heating boilers. Heat & Ven 12:60 Ag '15

**Boilers, Hot water**

- Hazard of the domestic hot water boiler. II Locomotive 30:142-5 Jo '15

**Boilers, Locomotive. See Locomotive boilers****Boilers, Marine**

- Dry back marine boiler, with tubes between furnace and combustion chamber. A. C. Meyers. plan Int Marine Eng 20:511-12 N '15; Abstract. Am Soc M 10 J 37:720 D '15
- Economy. F. H. Sadler. diags Int Marine Eng 20:460-2 O '15
- Experiments in coal consumption. Int Marine Eng 20:41-2 Ja '15
- Faulty designing of marine boilers. C. R. Williamson. Int Marine Eng 20:134-6 Mr '15
- How the efficiency of the Scotch boiler can be improved; abstract. J. Tait. Int Marine Eng 20:89-90 F '15
- Interesting case of boiler corrosion. F. Killian. diag Int Marine Eng 19:564-5 D '14
- Loosekin marine boiler and internal superheater. A. R. Willis. diags Power 42:293-5 Ag 31 '15
- Repairs to a Babcock and Wilcox boiler. F. H. Sadler. diag Int Marine Eng 20:319-20 J '15
- Test of the radial stays between the combustion chamber and the shell of a marine type boiler. diags Locomotive 30:102-10 O '14
- Unexploded boiler. A. Suzara. II Int Marine Eng 20:273-4 Je '15
- See also Marine engineering; Marine engines
- Boilers, Mercury**
- Power from mercury vapor. W. L. R. Emmet. II diags Am Inst E E Pro 33:473-89 Mr '14; Same. Gen Elec L 17:47-51, 59-103 Ja-F '14; Same cond. Power 39:440-50 Mr 31 '14; Same cond. Eng M 47:265-8 My '14; Same cond. Engineer 117:607-8 Je 26 '14; Excerpts. Sci Am 112:494-5 My 29 '15

**Boilers, Water-tube**

- Draft readings on a Stirling boiler. S. H. Viall. diags Power 41:341-5 Ja 12 '15
- How a water-tube boiler was repaired by an electric weld. A. C. Lasher. Elec W 66:1207-8 N 27 '15
- Improved Badenhausen water-tube boiler. diag Power 40:883-4 D 23 '14
- Putting new headers in water-tube boilers. R. T. Gray. Power 41:649-50 My 11 '15
- Reconstructing water-tube boiler settings. O. Monnett. diags Power 41:54-5 Ja 12 '15
- Rectangular pressure vessels. H. J. Vander Zeb. Locomotive 30:164-9 Ap '15
- Repairs to a Babcock and Wilcox boiler. F. H. Sadler. diag Int Marine Eng 20:319-20 J '15
- Test of a 30-h.p. class A Stirling boiler. Power 42:674 N 16 '15
- Tests on a recent type of chain grate stoker and new method of balling Stirling boilers. J. A. Hunter. diags Eng Soc W Pa 31:1-10; Discussion. 31:10-55 F '15; Abstract. Am Soc M 10 J 37:348-51 Jo '15
- Winslow high-pressure boiler. II diags Power 40:824-6 D 8 '14

**Boiling points**

- Advantageous form of still for the exact measurement of boiling point during fractional distillation. T. W. Richards and F. Barry. II Am Chem Soc J 36:1787-91 Ag '14
- Boiling-point of aqueous solutions of nitric acid at different pressures. H. J. M. Croighton and J. H. Githens. diag J Fr Inst 179: 161-9 F '15

**Bolivia**

- Financial developments in South American countries. W. H. Lough. II S Bur For & Dom Com 103:16-18 '15

**Industries and resources**

- Corocoro copper district of Bolivia. F. A. Sundt. Eng & Min J 99:189-90 Ja 23 '15
- Gold mining in Bolivia. F. C. Lincoln. II Eng & Min J 99:351-4 F 20 '15
- Hydro-electric plant at Bolivian tin mine. M. R. Lamb. II Eng & Min J 99:7-9 Ja 2 '15
- Mining in Bolivia. H. L. Venables. Eng & Min J 99:662 Ap 10 '15
- Tin mining in Bolivia. M. C. F. Schmelein. Eng & Min J 99:143-5 Ja 16 '15
- Tin mining in Bolivia. M. R. Lamb. Eng & Min J 99:506-6 Ap 3 '15
- Tin-ore dressing at Mallaguan, Bolivia. D. Copeland and S. B. Hollister. II Eng & Min J 100:461-4, 513-15, 558-8 S 18-O 2 '15
- Trip through Bolivia. S. C. Bullock. II Eng & Min J 100:421-4 S 11 '15

**Bolts and nuts**

- Ballou safety bolt nut for rail joints. *Il Ry Age* 59:751-2 O 23 '15  
 Bolt and nut making. D. T. Hamilton. *Il Mach* 21:333-5 Ja '15  
 Description of nut, bolt and rivet shop of Upson nut co., Cleveland, with details of arrangement and equipment. *Il. V. Sawhill. Il plan Iron Tr R* 56:1245-54-1 Je 17 '15  
 Foundation bolts for steel chimneys. *Il. D. Hess. diags Power* 42:476 O 5 '15; Same. *Eng & Min J* 100:718-19 O 30 '15  
 Holding power of a bolt. *Il. H. Fish. Il Power* 41:619-20 My 4 '15  
 Installing rolling-mill anchor bolts. A. Connelley. *diags Iron Age* 96:296-7 Ag 5 '15  
 National automatic nut tapper. *Il Mach* 21:515-17 F '15  
 National bolt header. *Il Mach* 21:833-4 Je '15  
 National continuous motion hammer bolt heading machine. *Il Ry Age (Mach ed)* 89:373-4 J1 '15; *Iron Age* 95:1217 Je 3 '15; *Iron Tr R* 57:265 Ag 5 '15  
 New forge shop of Upson nut company, Cleveland. *Il plans Iron Age* 95:1235-43 Je 17 '15  
 Proposed standard specification for quenched carbon steel truck bolts. *Ry Age* 59:32-3 J1 9 '15; Same. *Iron Tr R* 57:43-4 J1 1 '15  
 Reclaiming bolts with battered threads. J. P. Nolan. *Il Ry Age (Mach ed)* 89:39-40 Ja '15  
 Removable wedge bolt. *Il. E. Oppinger. diags Ry Age (Mach ed)* 89:591 N '15  
 Spacing of bolts for wrench clearance. *Il. J. Schroeder. Mach* 21:982 Ag '15  
 Turning engine bolts. C. L. Diekert. *Il diags Ry Age (Mach ed)* 89:193 1 Ap '15

**Bonds**

- Amortize and bond discount. O. A. Spden. *J Account* 20:203-15 S '15  
 Amortize and bond discount. R. J. Bennett. *J Account* 20:1-20 J1 '15  
 Bonus capital stock and bonds. W. P. Hilton. *J Account* 19:425-36 Je '15  
 Calculating premiums on bonds. *Mund J* 38:429 Ap 1 '15  
 Highway bonds: a compilation of data and an analysis of economic features affecting construction and maintenance of highways financed by bond issues, and the theory of highway bond calculations. L. L. Howes and J. W. Glover. *Il maps P S Artil Int* 136:1-129 '15  
 Life of highway improvement should limit term of bonds. N. P. Lewis. *Eng Rec* 72:362 S 18 '15  
 Bond bonds should provide for maintenance. J. F. With. *Eng Rec* 72:362 S 18 '15  
 Tyranny of the engineer. A. S. Little. *J Account* 20:186-203 S '15

*See also Railroads: Securitization: Securitization*

**Bonds, Rail. See Rail bonds****Bone-black. See Animal charcoal****Bonington, Richard Parkes, 1861-1928.**

- Architectural draughtsman. *Il. Window. Il Am Inst Arch J* 3:159-67 Ap '15

**Bonsall, Amos**

- Relics from the second Grinnell expedition. *Nel Am M* 70:300 My 8 '15

**Bonus system**

- Bonus system of comprehensive scope. Worcester, Mass. J. Nelson. *Iron Age* 95:568 Ja 7 '15  
 Compensation of motor renderers. H. P. Schaner. *Am Gas Inst Pro* 9:91-2, 1953 7 '14; Same. *Am Gas Light J* 101:353 N 23 '14; Same. *Eng & Contr* 42:558-9 1 18 '14; 191-2 London. *Am Gas Inst Pro* 9:93 2, 1957-1707 '14  
 Criminal speeding-up system and bonus facts. W. Crozier. *Am Ind* 15:30-1 Ja '15  
 Fixing standard time for a bonus system. Z. L. Potter. *Ry Age (Mach ed)* 89:192-3 Ap '15  
 Management of central stations. W. N. Polukov. *Eng M* 50:371-2 1 '15  
 Manila plant employees receive bonus for increasing coal economy. *Eng W* 66:594 M 25 '15  
 Modified bonus method of wage payment. G. W. Mixer. *Iron Age* 94:1234-5 1 17 '14  
 Operating a foundry on a scientific basis. P. A. Parkhurst. *Il Foundry* 43:53-8 F '15

- Piece work and bonus systems in the boiler shop. N. H. Ashworth. *Ry Age (Mach ed)* 89:240-2 My '15  
 Rapid tunnel driving under the bonus system. J. L. McFarland. *Eng N* 71:105-6 Ag 26 '15; Same. *Eng & Min J* 100:517 1 S 23 '15  
 Task and bonus work applied to excavation. Concrete Com 5:243 1 '15  
 Taylorism and the bonus system. W. L. Myles. *Mach* 21:101-5 Ja '15  
 Wage systems of scientific management. *Ind Eng* 15:47-50 F '15

**Bookbinding**

- Scientific management in the office. R. T. Kent. *Iron Age* 95:582-6, 112 1 Ja 7 11 '15

**Cost**

- Bookbinding labor cost. A. H. Hurdman. *Il Ind P R* 60:895-8 S 15

**Bookbinding machinery**

- Foreign trade in bookbinders' machinery. *Engineer* 119:100 1 Ap 23 '15

**Bookkeeping**

- Society bookkeepers' standardized method for recording and checking the account. *Mach Ind n* 5:13:233 5 Je '15

*See also Accounting, Auditing, Cost accounting*

**Books and reading**

- Books of 1911. Statistics from *Bookman's Weekly*. *Sci Am* 113:28, 31, 32 '15  
 Light reading for job operators. *Sci Am* 113:292 P 20 '15

*See also Bookbinding, Printing*

**Booth, Franklin**

- Franklin Booth, artist and photographer. *Il Hogan. Il Indust* 191:21:296, 1 Ja '15

**Borax**

- Blacksmith's use of borax and sodium. *Eng & Min J* 100:104 1 20 '15  
 Current data on the borax industry. *Il Hogan. Mach & Chem Eng* 33:204 1 1 '15

**Borers (animals)**

- Barrowing animals. *Bores* that work their way even through rock. *Il Hogan. Ind Eng* 113:99 1 3 '15

- Construction of timber borer machines. *Il Hogan. Ry Age* 95:37 1 3 Ja 7 '15

- Mayne wood borer. *Il Hogan. Ind Eng* 113:104 1 3 Ja 7 '15

**Boric acid**

- Using volcanic steam for the production of electrical energy. *Il Hogan. Ind Eng* 113:97 1 3 Ja 7 '15

- Boring (earth and rock). *See Boring: earth and rock and metal working*

- Boring (metal working, etc.). *See Boring: metal working, etc.*

**Boron**

- Determination of boron in steel. *Il Hogan. Ind Eng* 113:97 1 3 Ja 7 '15

- Effect of boron upon the mechanical and other properties of electrolytic iron. *Il Hogan. Ind Eng* 113:97 1 3 Ja 7 '15

**Boron nitride**

- Production of atmospheric nitrogen. *Il Hogan. Ind Eng* 113:97 1 3 Ja 7 '15

**Bose, Jagadis Chandra, 1872**

- Scientific work of 1907. *Il Hogan. Ind Eng* 113:97 1 3 Ja 7 '15

**Boston, Massachusetts**

- Boston proposes to extend eastward into bay map. *Eng Rec* 71:417 M 22 '15

**Architecture**

- Annex to the city hall, Boston, Mass. *Il Hogan. Arch & Bldg* 47:266 2 11 '15

- Architectural reclamation of small areas in cities. *Il. D. Klein. Il Arch Rec* 37:1 25 Ja '15

- Boston city club, Somerset street. Plans and plans. *Brick* 24:77, 78 21 d M '15

**Bridges**

- Apportionment of cost of highway bridges between street railways and cities, with discussion. C. M. Hafford. *Il diags W* 66:10 1 20:408 43 My '15

**Boston, Massachusetts—Bridges—Continued**

Design and construction of the Lars Anderson bridge over the Charles river, Cambridge and Boston, Mass. II plans Eng & Contr 42:334-8 O 7 '14

**Custom house**

Electrical features of Boston custom house tower. II Elec R & W Elec'n 67:336-7 Ag 21 '15

**Harbor**

Development of port of Boston. map Eng & Contr 43:sup29 Je 16 '15

**Lighting**

Boston street-lighting contract signed. Elec W 64:1185 D 19 '14

**Parks**

Aquarium and winter house for birds for the city of Boston. W. D. Austin. II plans Brickb 24:47-50 F '15

**Rapid transit**

Another Massachusetts fare increase. map Elec Ry J 46:226-8 Ag 7 '15

Massachusetts commission reports to the legislature on transportation in metropolitan Boston. Elec Ry J 45:809-10 Ap 24 '15

Station entrances on Boston subways. W. B. Conant. II Munic Eng 49:13-14 J1 '15

**Sell formations**

Boston foundations. J. R. Worcester. 26 fold maps Boston Soc C 10 J 1:1-29 Ja '14; Discussion. 1:179-248, 305-417 Ap, 8 '14

**Streets**

\$3,000,000 needed for improving Boston's streets. Eng Rec 72:503-4 O 23 '15

**Water supply**

Chelsea creek tunnel for Boston water main. W. B. Conant. II diggs Munic J 38:387-90 Mr 25 '15

**Boston & Albany railroad**

Boston & Albany railroad improvements at Worcester, Mass. L. C. Morphy. II Boston Soc C 10 J 1:481-98 N '14

**Boston & Maine railroad**

Abstract of annual report. map Ry Age 59: 679-80 O 15 '15

Federal valuation of the Boston and Maine railroad. F. C. Shepherd. Boston Soc C 10 J 2:291-326 O '15; Same abstr. Eng Rec 72: 538-41 O 30 '15; Same abstr. Ry L 57:665-7 N 20 '15

Track elevation at Lynn, Mass. C. B. Breed. II diggs plans Eng N 74:533-7 S 16 '15

**Boston elevated railway**

Statement of income, profit and loss for the fiscal year ended June 30, 1915. Elec Ry J 46:1008-9 N 13 '15

**Boston Post road**

Surfacing the Boston Post road. II Munic J 39:547-8 O 7 '15

**Boston society of civil engineers**

Duties and sphere of action of a local engineering society with special reference to the Boston society of civil engineers. H. P. Bddy. Boston Soc C 10 J 2:149-63 Ap '15

Proceedings. Boston Soc C 10 J 2:1\*-39\* Ap '15

**Bottles**

Bottle filling alarm. E. J. Hall. II Met & Chem Eng 13:347 Je '15; Same. Sci Am 8 80:284 O 30 '15

**Boulder batholith**

Boulder batholith and its bearing upon the future of mining in the district. J. A. Grimes. Eng & Min J 100:794 N 13 '15

Boulder batholith of Montana. P. Billingsley. diggs maps Am Inst Min 19 Bul 97:31-47 Ja '15; Discussion. 101:1128-37 My '15

Is the Boulder batholith a laccolith? discussion of paper by A. C. Lawson. A. Knopf. Econ Geol 9:306-403 Je '14

**Boulder county, Colorado**

Mining in Boulder county. Eng & Min J 100: 797-8 N 13 '15

**Boulders**

Boulder parapet for roadways in Pullman interstate park. II Eng N 74:162-3 J1 22 '15

**Bowman, Austin Lord, 1861-1915**

Sketch. por Eng N 73:1141 Je 10 '15; Eng Itoc 71:758 Je 12 '15

**Box cars. See Freight cars****Boxes**

See also Cardboard

**Boy scouts**

Boy scouts and forests. K. W. Woodward. II Am For 21:103-9 F '15

**Boycott**

Danbury hatters decision. Am Ind 15:7-10 F '15  
Famous Danbury hatters' case decided in favor of the boycotted employer. Iron Tr R 56: 143-5 Ja 14 '15

**Brake beams**

Brake beams; Master car builders' association committee report. Ry R 56:834-5 Je 19 '15  
Car control. J. Fitzmorris. Ry Age (Mech ed) 59:71-2 F '15  
Safety hanger for brake beams. diggs Ry Age 59:201 Ag 13 '15

**Brake rigging**

Berdan brake rigging. diggs Ry Age (Mech ed) 59:483 S '15  
Inexpensive slack take-up for brake rigging. II Elec Ry J 46:921 O 30 '15  
Manual slack adjuster. diggs Ry Age 59:948 N 19 '15  
Tests of standard and clamp brake rigging for passenger train service; abstract. E. F. Lickey. Am Soc M 10 J 27:734-5 J1 '15

See also Air brakes; Brakes

**Brake shafts**

Brake shaft drop handle and ratchet. diggs Ry Age (Mech ed) 59:43 Ja '15  
Improved brake shaft arrangement. Buffalo, Rochester & Pittsburgh Ry. diggs Ry R 56: 320-1 Mr 6 '15  
Square brake shaft. diggs Ry Age (Mech ed) 58:647-8 J1 '14

**Brake shoes**

Brake shoe with malleable iron inserts. diggs Ry Age 59:168 J1 23 '15  
Driver brake shoes. J. S. Shenfe. Ry Age 58: 616 Mr 19 '15

**Brakes**

Alternating-current coal hoist. R. E. Brown. II Am Inst M Pro 34:615-23 Ap '15; Discussion. 34:2895-914 N '15  
Alternating-current magnetic brake. II Elec R & W Elec'n 67:301 Ag 14 '15; Iron Age 96:414 Ag 19 '15; Iron Tr R 57:265 Ag 5 '15; Mach 21:1024-5 Ag '15  
Automatic solenoid brake for crane, hoist, lift-bridge and similar service. II Elec R & W Elec'n 66:1230-1 J1 20 '14; Mach 21:328-9 J1 '14

Dynamic braking. Elec R & W Elec'n 66:300-1 F 13 '15

Freight car hand brake. diggs Ry Age 58:944 Ap 30 '15; Same. Ry Age (Mech ed) 59:258-9 My '15

Hand-brake pressures. L. W. Horne. diggs Elec Ry J 46:367-8 J1 10 '15

Hand-brake pressures. W. C. Greenough. diggs Elec Ry J 46:276-7 Ag 14 '15

Hand brakes outlawed. Ry Age 58:1018-19 My 14 '15

More notes on regenerative braking. Elec Ry J 45:1101 Je 12 '15

Quick action lever hand brake. II Ry Age 59:398-9 Ag 27 '15

Railway vehicle brakes. diggs Engineer 119:67 Ja 15 '15

Regenerative braking. Engineer 119:458 My 7 '15

Regenerative braking. F. J. Sprague. Elec Ry J 45:1076-7 Ja 5 '15

Train brake and signal equipment; Master car builders' association committee report. Ry R 56:832-3 Ja 19 '15

See also Air brakes

**Brakes, Automobile**

Evolution of hub brakes. diggs Horseless Age 36:23-4 J1 7 '15

**Brakes, Automobile—Continued**

Three broad classes of brakes. A. L. Clayden, *diag*s Automobile 32:453-5 Mr 11 '15  
20,000,000 feet of brake lining. Automobile 32:509 Mr 18 '15

**Brashear, John A., 1840-**

President of the Am. Soc. M. 16. W: L. Seuffer, *por* Eng N 73:389 F 25 '15

**Brass**

Annealing brass for forming and drawing operations. H. W. Dunbar, *il* Mach 21:560-1 Mr '15

Annealing of brass. F. Johnson, *il* Metal Ind n s 13:65-7 F '15

Annealing of brass cartridge cases. L. J. Krom, *il* diag Metal Ind n s 13:33-9 G 8 '15

Applications of metallic cobalt: experiments conducted with cobalt and copper alloys. D. B. Browne, *il* Metal Ind n s 12:509-10 D '14

Brass and bronze off-shootings of copper. J. B. Schipper, *il* map Automobile 33:315-19, 368-70, 413-13 Ag 19-8 2 '15

Brass finishing and coloring. A. A. Le Fort, *il* Metal Ind n s 13:144 Ap '15

Brass in water works construction with special reference to experience on the Catskill aqueduct: abstracts. A. D. Plinn, *Eng & Contr* 43:57-8 Ja 20 '15; *Metal Ind n s* 12:500-2 D '14; *Mun. J* 37:922-1 D 21 '14

Failure of structural brasses. P. D. Merlen and R. W. Woodward, *il* Metal Ind n s 13:459 G 1 N '15 (to be cont)

Heat treatment of copper and brass. C. R. Hayward, *il* Metal Ind n s 13:275-7 J1 '15

Rich gold color on brass. *Metal Ind n s* 13:239 Jo '15

Venedium in brass. R. J. Dunn and O. E. Hudson, *il* Metal Ind n s 13:330 Ag '15

Why brass is an expensive luxury in the engine room. Old Scotch, *il* Marine Eng 29: 350 Ag '15

*See also* Brass founding; Tubes

**Brass founders' ague**

Note on review of Dr. Thompson's occupational diseases. J. W. Luther, *J Ind & Eng Chem* 7:451-2 My '15

**Brass founding**

Copper alloys with notes on brass founding. H. L. Benson, *diag*s Metal Ind n s 13:318 1 Ag '15

Developments in electric brass furnace melting: new type to utilize the pinch effect. C. H. Chamber and C. Herbig, *il* diag Foundry 42:187-90 1 '15; *Same* cont. *Iron Age* 91:1192-5 D 31 '14; *Abstract, Ind Eng* 15:641 F '15

Difficulties with yellow brass trap covers. *il* Foundry 43:29 Jo Ja '15

Drop-pouring process of casting: the solution of a difficult brass foundry problem. F. A. Barnes, *il* Metal Ind n s 12:511 12 D '14

Making brass castings with emergency equipment. J. Leachman, *diag* Foundry 43:32 Jo '15

Mushroom gates and risers. *Foundry* 43:69 F '15

Practical suggestions for the brass foundry. R. Meeks, *il* Metal Ind n s 13:99 Mr '15

Reclaiming brass sweepings. A. W. Leanne, *Iron Age* 95:940 Ap 20 '15; *Same*, *Foundry* 43:191-2 My '15; *Same*, *Metal Ind n s* 13: 187-8 My '15

Tests of natural gas fired brass furnaces. F. L. Wolf and R. B. Burr, *diag*s Foundry 43:153-7 Ap '15

Top-pouring brass floors. J. L. Seidner, *diag* Foundry 43:231-2 Jo '15

Trolley wheel difficulties. *Foundry* 43:315 An '15

Use of electricity in melting brass. H. L. Torrey, *il* diag *Iron Tr R* 57:319 29, Ap 12 '15

**Brass foundries**

Brass foundry equipment and management. W. H. Parry, *Metal Ind n s* 13:5 6, 61, 164, 452 Ja-F, My, N '15

Brass foundry profits. W. H. Parry, *Metal Ind n s* 13:364 8 '15

Brass goods manufacturing plant. P. W. Blair, *il* Metal Ind n s 13:269-73 J1 '15

Cost keeping in the brass foundry. C. O. Skeeper, *Metal Ind n s* 12:497-9 D '14

Efficiency in the brass foundry. W. H. Dunn, *Metal Ind n s* 13:327-9 Ag '15

Efficient methods of the Yale & Towne mfg. co. and details of its specially equipped shop. H. C. Bishop, *il* plans *Foundry* 43:129 3, Ap '15; *Same* (charts for tools and hand work). *Iron Tr R* 56:809 161 Ap 22 '15  
Team work in a brass plant. P. W. Blair, *Foundry* 43:779 80 J1 '15

*See also* Brass founding

**Brass plating**

Control of brass and copper plating solutions. A. D. Cowperthwaite, *Metal Ind n s* 13:65 9 F '15

**Brauneria angustifolia**

Constituents of the root of *Brauneria angustifolia*. F. W. Heyl and M. C. Hall, *Am Chem Soc J* 37:1769 8 J1 '15

**Brazil**

Banking and credit in Argentina, Brazil, Chile, and Peru. E. N. Hurley, *J Ind Eng & Bus Com* 90:1 72 '14

Financial developments in South American countries. W. H. Lamb, *J Ind Eng & Bus Com* 103:19 28 '15

Receivables in Brazil. *Exportation* 1 P Miller, *il* Soc Am 8 23 '15 9, 26, 29, 31, 34 '15

**Commerce**

America and Brazil in the world. M. L. Dunn, *Metal Work* 57:76 14 '14

Electrical markets in Brazil. H. S. Lamb, *il* Elec W 64:14 8, 10, 13, 16, 19, 22 '15

**Industries and resources**

Coal fields of South America. B. G. Thompson, *Colliers* 36:2 32 '14

Electrical opportunities in Brazil. H. S. Lamb, *il* Elec W 66:56 1 J1 '15

Iron industry in Brazil. J. C. Hanson, *il* diag *Am Ind* 15:156 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

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**Brewing** *Continued*

Starch-forming enzyme from malt: its action on the hemicelluloses and its commercial application to brewing. C. B. Davis. *II J Ind & Eng Chem* 7:115-18 *I* '15

**Brick**. See Bricks**Brick construction**

Estimating the cost of mill buildings. C. F. Dinsman. *Eng & Contr* 44:185 *S* 8 '15

Large brick piers tested at laboratory of Bureau of standards; abstracts. J. L. Griffith and J. C. Krugg. *II Eng Rec* 71:460-1 *Ap* 10 '15; *Eng N* 74:242-3 *Ag* 5 '15; *Ind Eng* 15:105 *S* '15

See also Bricklaying; Pavements, Brick

**Brick handling**

Cost of loading bricks into a box car by means of a portable belt conveyor. A. C. Haskoll. *diag Eng & Contr* 44:204 *S* 15 '15

Handling bricks with gravity roller conveyors. W. B. Conant. *II Eng N* 74:834-5 *O* 28 '15

Moving brick by wheelbarrow. W. B. Conant. *II Eng N* 74:701 *O* 7 '15

**Brick-making**. See Brickmaking**Brick pavements**. See Pavements, Brick**Bricklaying**

British method of laying bricks. *Bldg Age* 37:67-8 *I* '15

Industrial education in the South: the course in bricklaying and plastering as taught in the Hampton Institute trade school. *II Bldg Age* 37:67-9 *Ja* '15

Saving money in the laying of brick. *II Bldg Age* 37:46-8 *Ja* '15; Same cond. *Eng Rec* 71:90 *Ja* 16 '15

**Cost**

Smelter brick-laying costs. *Eng & Min J* 100:109 *Jl* 17 '15

**Brickmaking**

Brick-plant production increased by electric drive. *II Elec W* 65:794 *Mr* 27 '15

Electrically operated brick factory at Springfield, Ill. *II Elec W* 65:971-3 *Mr* 13 '15

Electricity in brick-making. *II Elec R & W Elec* 66:65-9 *Ja* 9 '15

Making brick without clay. *Ry Age* 58:468 *Mr* 12 '15; *Sci Am* 112:351 *Ap* 10 '15

Motor applications of the brick manufacturing industry. T. Z. Simpson. *Am Inst M M Pro* 34:3023-8 *I* '15

Motors show saving in replacing gasoline engines in brickyard. *II Elec W* 66:258 *Jl* 31 '15

New building material invented by A. Mallonovsky. *II Munic Eng* 48:180-92 *Mr* '15

**Bricks**

Checker design for open hearths. W. A. Janssen. *Iron Tr* 11:57:624-5 *S* 30 '15

Diatom heat-insulating brick. *Met & Chem Eng* 13:129 *I* '15

Standard prices for furnace brick. *Iron Tr R* 55:1185-6 *D* 24 '14

What are porous bricks? *Bldg Age* 37:60 *Jl* '15

See also Brick construction; Bricklaying; Brickmaking; Clay; Fire brick; Pavements, Brick; Tiles

**Testing**

Favorable tests of Chimra brick. *Eng Rec* 70:649 *D* 12 '14

Rattler test for paving brick abandoned in St. Louis. M. Schuyler. *Eng Rec* 72:200-1 *Ag* 14 '15

Spherical bearings versus flat plates in crushing tests on bricks. M. L. Baker and A. F. Shaw. *diag Asm Eng Soc J* 55:123-8 *O* '15

**Bricks, Concrete**. See Concrete bricks**Bricks, Glass**. See Glass bricks**Bridge abutments**. See Bridges Abutments**Bridge approaches**

Concrete chuting plant with braced boom and chute. M. L. Jones. *II Eng N* 73:193-4 *I* 4 '15

Design features of the approaches of the North side Point bridge, Pittsburgh, Pa. *diag Eng & Contr* 42:196-8 *Ag* 26 '14

Highway bridge approach details. F. Barber. *II Eng N* 73:961-3 *My* 20 '15

Plant and working methods on approaches to North side Point bridge. M. L. Jones. *II diag Eng N* 72:124-5 *D* 3 '14

Slip of approach embankment damages concrete bridge, Herkimer, N. Y. A. T. Clark. *II Eng N* 74:771 *O* 21 '15

**Bridge contracts**

Instructions of the Pennsylvania state highway commissioner to bridge companies. *Eng & Contr* 43:79 *Ja* 27 '15

Sizing-up and bidding on a contract in dull times. *diag Eng N* 73:682-3 *Ap* 8 '15

**Bridge design**

Allowing for impact in bridge calculations. J. D. W. Hall. *diag Engineer* 120:151-3 *Ag* 13 '15

Bridge for Holland government railway in Java. *II diag Ry R* 57:404-5 *S* 25 '15

Center bearing, machinery and gates, Congress St. swingbridge, Troy, N. Y. *diag plan Eng N* 73:804-5 *Ap* 29 '15

Chesapeake & Ohio Northern railway bridge over the Ohio river at Sciotoville, O. *diag Eng & Contr* 44:84-5 *Ag* 4 '15

Concrete arch bridge at Saskatoon. *II diag Eng N* 73:434-6 *Mr* 4 '15

Concrete viaduct of a new type; eastern viaduct, New York Connecting R. *II diag Eng N* 73:886-7 *My* 6 '15

Cost of railway footbridges. *diag Engineer* 120:107-9, 221-3, 240-2, 266-8 *Ag* 27-8 '15

Design and construction of a reinforced concrete truss bridge with braced counterfort abutments near Merthyr, Wales. C. M. Holloway. *diag Eng & Contr* 44:330-2 *N* 17 '15

Design and construction of the Main street reinforced concrete viaduct at Fort Worth, Tex. S. V. Bowen. *diag Eng & Contr* 43:211-16 *Mr* 10 '15

Design and construction of the San Jacinto street reinforced concrete bridge, Houston, Texas. *II diag Eng & Contr* 42:492-5 *N* 25 '14

Design and construction of the substructure of the Buffalo River lift bridge, Buffalo, N. Y. *II diag Eng & Contr* 44:362-5 *N* 10 '15

Design and erection of the Pennsylvania lift bridge no. 458 over the south branch of the Chicago river. W. L. Smith. *diag W Soc* 30 *J* 20:478-88 *My* '15; Same. *Ity R* 56:519-24 *Ap* 17 '15; Same cond. *Eng Rec* 71:611-12 *My* 15 '15

Design, construction and detailed costs of the Richelieu river bridge, Lacolle Junction, Quebec. *II diag Eng & Contr* 42:542-6 *D* 9 '14

Design, construction and detailed labor costs of the substructure of the double-leaf trunnion bascule bridge at Chicago avenue, Chicago. *diag plan Eng & Contr* 42:388-90 *O* 21 '14

Design features of a single-leaf trunnion bascule bridge over the Channel street waterway, San Francisco, Cal. *diag plans Eng & Contr* 44:248-50 *S* 29 '15

Design features of the Alger bridge, Columbus, Ohio a 1,166-ft. reinforced concrete structure. *diag Eng & Contr* 44:206-9 *S* 15 '15

Design features of the cantilever, simple-truss and girder spans of the Bloomfield bridge, Pittsburgh. *diag Eng & Contr* 42:210-3 *S* 9 '14

Design features of the East Kansas avenue bridge over the Kansas river at Kansas City, Kan. *diag Eng & Contr* 43:496-9 *Ja* 2 '15

Design features of the substructure and approaches of the Bloomfield bridge, Pittsburgh. *diag Eng & Contr* 42:235-7 *S* 23 '14

Design of concrete highway bridges with special reference to standardization. C. B. McCullough. *diag Eng & Contr* 43:268-70 *Mr* 24 '15

Design of substructures for wooden and combination highway bridges. C. E. Edgerton. *Eng & Contr* 44:250-3 *S* 29 '15

Design of the 531-ft. truss spans of the North side Point bridge, Pittsburgh, Pa. *diag Eng & Contr* 41:358-61, 684-5; 42:196-8 *Mr* 25, *Ja* 17, *Ag* 26 '14

Design of the main shoes of the new Quebec bridge. *II diag Engineer* 118:527-8 *D* 4 '14

Design of the reinforced concrete cantilever bridge on Humphreys avenue, Cincinnati. *diag Eng & Contr* 43:271-2 *Mr* 24 '15



**Bridge design--Continued**

- Deterioration of steel bridges over railway tracks at Buffalo, N. Y., Roadpath, II dings Eng N 73:144-7 Jo 10 '15
- Double-deck bascule bridge over Chicago river, H. E. Young, II dings Eng N 74:876-9 N 4 '15
- Double-leaf bascule railway bridge, II dings Engineer 120:246-7 S 10 '15
- Elastic curve applied to the design of the Sciotoville bridge, D. B. Steinman, Eng Rec 73:258-60 Ag 26 '15
- Eliminating the Tower drive grade crossing at St. Louis, II dings plan Eng N 74:52-3 J1 8 '15
- Fullway viaduct in Baltimore built on sharp curve with concrete from 205-foot tower, II dings Eng Rec 71:544-5 My 1 '15
- Five bridges erected in two days; unit system of reinforced concrete solves time element, II dings Eng Rec 71:172-4 Jo 6 '15
- Highway bridge approach details, F. Barber, II Eng N 73:961-3 My 20 '15
- Important questions on highway-bridge design, W. Whited, Eng N 73:106-8 Ju 21 '15
- Lata Thomas C. Koefler and the plans for the Victoria bridge at Montreal, Eng N 73:179-80 Ju 28 '15
- Lift spans over Arkansas river designed for possible shifting of channel, II dings Eng Rec 72:667-70 N 27 '15
- Long-span continuous-truss bridge over the Ohio, dings Eng N 71:64-6 J1 8 '15
- Now and simplified derivation of the most general form of the theorem of three moments, G. A. Muncey, dings Eng & Contr 43: 27-9 Ju 13 '15
- New swing bridge over the Nile at Cairo, II dings Engineer 120:270-2, 271 S 17 '15
- Ohio river bridge for the C., B. & Q. R. II, dings Eng N 71:230-2 J1 29 '15
- Ohio river bridge to contain longest riveted-truss spans in America, dings Eng Rec 71: 799-800 Jo 26 '15
- Ornamental arch effect secured by cantilever design, Chester, Pa., Eng Rec 71:161 P 6 '15
- Overcrossing has provision for future side-walks, dings Eng Rec 72:93 Ag 11 '15
- Pacific highway interstate bridge over the Columbia river and its approaches between Vancouver, Wash., and Portland, Ore., E. E. Howard, dings Eng & Contr 43:549-2 Jo 16 '15
- Pacific highway interstate bridge over the Columbia river, Portland, Ore., E. E. Howard, dings Eng N 73:1218-21 Jo 21 '15
- Pacific highway interstate bridge; special pier and floor design feature, dings Eng Rec 72: 18-20 J1 3 '15
- Plan for beautiful bridges, H. G. Tyrrell, Ascn Eng Soc J 51:35-13 Ju '15
- Portland harbor bridge, II dings plan Eng N 71:821-9 O 28 '15
- Provision for traction stresses in quarter bridge, C. A. Norton, dings Eng Rec 71: 492-3 Ap 17 '15
- Reinforced concrete bridges along the Columbia highway in Oregon, R. P. Billner, II dings Eng & Contr 43:121-3 P 10 '15; Same, Eng N 72:145-8 D 10 '14
- Reinforced-concrete highway arch for grade separation, dings Eng Rec 70:703-4 D 26 '14
- Reinforced-concrete viaduct at St. Louis, Mo., C. W. Martin, II dings Eng N 71:723-7 O 14 '15
- St. Louis municipal bridge; cast approach a steel viaduct nearly 3 miles long, dings Eng Rec 72:634-5 N 20 '15
- Seventy years of civil engineering, II Sci Am 112:627-9 Jo 6 '15
- Steel arch highway bridge in the Hudson highlands, II map Eng N 74:566-7 O 25 '15
- Street bridges in Philadelphia designed for permanent artistic effects, II dings Eng Rec 72:594-600 N 15 '15
- Tables for determining the bending moments and shears in simple beams and in beams fixed at one and both ends, H. M. Cotton, Eng & Contr 43:335-40 Ap 14 '15
- Two time-savers for use with influence lines, D. B. Steinman, Eng Rec 71:517 Ap 24 '15
- Web reinforcement of notched plate girders, Barton street bridge, Pawtucket, R. I., II dings Eng N 73:985 My 20 '15
- Wind stresses in highway bridges, R. Fleming, Eng N 73:373-5 P 26 '15
- Wind stresses in railroad bridges, R. Fleming, Eng N 73:252-6 P 11 '15
- Wind stresses in skew bridges, J. P. J. Williams, Eng N 73:622-6 Ap 1 '15
- See also Bridges, Load; Elevated railroads; Retaining walls

**Bridge failures**

- Bridge cargo falls at Red Bank, N. J., are all failures fortuitous? II Eng N 71:781-6 O 21 '15
- Bridge sidewalk failure due to paving expansion, Dallas, Texas, II dings Eng N 73:32 Ju 11 '15
- Collapse of arch framework, Detroit Superior bridge, Cleveland, II Eng N 73:141-2 Jo 21 '15
- Collapse of un-diffused timber Howe bridge, II Eng N 71:222 J1 20 '15
- Concrete arch forms fall and steel trusses collapse, II Eng Rec 71:63 Jo 26 '15
- Flood wrecks majority bridges, II Eng N 71: 516-8 Jo 15 '15
- Slip of approach embankment damages concrete bridge, Holmden, N. Y., A. T. Clark, II Eng N 71:771 O 21 '15

**Bridge inspection**

- Difficulty of thorough bridge inspection I II Eng, II Ry R 2:26, 27 O 30 '14
- Inspection and maintenance of suspension bridges, II Eng N 71:691-3 J1 13 '15
- Instructions governing the inspection of bridges, culverts and waterways under the Missouri Pacific Ry., Eng & Contr 41:9-14 N 17 '15

**Bridge moving**

- Actual operations in moving bridge with the shifting of double truss spans across the Chicago & North Western R. Co. at Milwaukee, II Eng & Contr 41:106-10 Ap 14 '15
- Design and construction of a movable bridge to the actual shifting of a double truss swing bridge on the Chicago & North Western R. Co. at Milwaukee, Eng N 71:691-3 J1 13 '15
- How the Chicago & North Western was helped at Milwaukee bridge, II Eng Rec 71:683-4 Ap 16 '15
- Rebuilding the Alton suspension bridge, II Eng Rec 71:683-4 Ap 16 '15
- Removal to new location of the bridge into place, old South Western R. Co. at Milwaukee, II Eng Rec 71:683-4 Ap 16 '15
- Replacing a large truss bridge by a steel movable bridge, II Eng Rec 71:683-4 Ap 16 '15
- Shifting two Milwaukee suspension bridges, II Eng N 71:683-4 Ap 16 '15

**Bridge patents, See Bridges, Patents****Bridge piers**

- Locating a city bridge with relation to foot paths, II Eng N 71:266-7 Jo 2 '15

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- Patenting steelwork for the Hell Gate arch, II Eng Rec 70:684-6 P 26 '14
- Hell Gate bridge in the shop, II Eng N 72:116-18 D 8 '14
- Splicing table in the structural shop equipment in Port 1911 bridge works, II Eng Rec 71:683-4 Ap 16 '15

**Bridge truss**

- Wood block and granite for bridge spans, E. A. Byrne, II dings Assoc Eng 18:317-9 Jo '16

**Bridge works, See Bridges, Shops****Bridgeport, Connecticut**

- City street traffic investigation, Bridgeport, Conn., A. F. Miller, plan Eng N 71:111-12 Ju 21 '15

**Bridges**

- Apportionment of cost of highway bridges between street railways and cities with discussion, C. M. Spofford II dings W 1:20-21 J 20 100-43 My '16

**Bridges -Continued**

Bridge cost record used by the Illinois highway commission. Eng & Contr 42:200-3 Ag 28 '14

Bridges and buildings in cities, 1915; tabulation. Munic Eng 48:267-8 Ap '15

Completing the new Mississippi river bridge at St. Louis. Eng N 73:954-5 My 13 '15

Construction and cost data on some highway bridge work in Alaska. E. A. Pope. Eng & Contr 42:387-8 O 31 '14

Construction and maintenance of roads and bridges from July 1, 1913, to December 31, 1914. U S Agric Bul 284:1-84 '15

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Construction of wooden and combination highway bridges. G. B. Edgerton. diag Eng & Contr 44:389-91 O 13 '15

County road bridges in 1915; tabulation. Munic Eng 48:268-70 Ap '15

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Design features of the East Kansas avenue bridge over the Kansas river at Kansas City, Kan. diag Eng & Contr 43:496-9 Jo 2 '15

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Eleven-span wooden arch bridge of fifty years ago. Il Eng Rec 71:142 Ja 30 '15

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Design, construction and detailed costs of the Richelieu river bridge, Lacelle Junction, Quebec. Eng & Contr 42:585-9 D 23 '14

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Highway bridges and structures. W. S. Gearhart. Good Roads n s 10:254-7 N 6 '15

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Design and erection of the Pennsylvania lift bridge no. 458 over the south branch of the Chicago river. W. W. Priest. Il diag W Soc 10 J 20:488-500 My '15; Same. Ity R 56:524-8 Ap 17 '15; Same cond. Eng Rec 71:613 My 15 '15

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Piecemeal erection of a bridge on the Boston & Maine R. R. K. W. Lemcke. Il diag Eng N 74:1057-9 D 2 '15

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Floors for steel highway bridges in Illinois. C. C. Older. *Eng Rec* 70:661-5 N 19 '14; Same. *Eng & Contr* 43:8-10 Ja 6 '15; Same with discussion. Good Roads 11:9-10 F 6 '15

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Surfacing bridges. F. H. Lander. *Ill Munic Eng* 19:150-1 Ag '15

Waterproofing masonry steel floor bridges; abstract. R. T. Munnet. *Eng & Contr* 44:79-81 Ja 27 '15; *Eng N* 74:213-7 F 12 '15

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Whomam concrete bridge floor drains placed under curb. *Ill Eng Rec* 72:604-5 N 13 '15

Wood block and granite for bridge floor. R. A. Byrne. *Ill Eng Munic Eng* 18:347-9 Ja 1 '15

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Bridge foundations and the use of pneumatic caissons for constructing bridge foundations in Canada. *Eng & Contr* 43:298-301-3 23 '14

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Chattanooga creek bridge of the N. C. & St. L. C. H. Johnson. *Ill plan Ry Age* 59:443-4 Ag 20 '15

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- Erecting new trusses on a canal bridge and dam. W. R. Browne. Il diag Eng N 74:173-4 J1 23 '15
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- Installing a highway bridge by end-pin slings. R. C. Hardman. Il Eng N 73:352-3 F 18 '15
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- Design, construction and detailed costs of a reinforced concrete girder bridge over Red Cedar river, Melgaard. R. A. South. *II* *diag* Eng & Contr 41 19 53 J1 24 '15
- Design, construction and detailed costs of the McKinley Ford bridge, La Salle county, Ill. *II* *diag* Eng & Contr 43:129 82 2 24 '15
- Design features of the Alps bridge, Columbus, Ohio N 1,163 ft. reinforced concrete structure. *diag* Eng & Contr 44:296 9 D 15 '15
- Design of concrete highway bridges with special reference to standardization. C. H. McCullough. *diag* Eng & Contr 43 268 30 Mr 24 '15
- Design of the reinforced concrete cantilever bridge on Rummynode avenue, Cincinnati. *diag* Eng & Contr 43:312 2 Mr 21 '15
- Erecting reinforced concrete trestles. E. M. Orhue. *II* *Eng* Age 58:1080 My 21 '15
- Fullway viaduct in Baltimore built on sharp curve with concrete from 200 foot tower. *II* *diag* Eng Rec 71:514 6 My 4 '15
- Just concreting on Brooklyn Brighton viaduct, Cleveland. *II* *diag* Eng N 74:151 6 S 9 '15
- Features of the Tunkhannock creek viaduct recently completed at Nicholson, Pa. *II* Eng & Contr 44:399-90 N 17 '15

**Bridges, Concrete.—Continued**

Five bridges erected in two days; unit system of reinforced concrete solves time element. *II* *Eng Rec* 71:172-4 F 6 '15; Same cond. *Eng M* 49:109-11 Ap '15

Flat-slab bridges at Denver combine permanency and good appearance. W. H. Wheeler and C. A. P. Turner. *II* *Eng Rec* 72:38-40 JI 10 '15

Forms built before supporting falsework for concrete bridge. L. C. Hardman. *Eng Rec* 72:492 O 16 '15

Haights Run bridge erected for city of Pittsburgh. *II* *Concrete Cem* 6:244 D '14

Half-mile concrete viaduct provides double-deck trafficway in Kansas City. H. L. Fox. *II* *Eng Rec* 71:164-6 F 6 '15

Handling steel centers for concrete arches. H. B. Ketchum. *II* *Eng N* 74:162-3 S 2 '15

Lipple street viaduct, Cincinnati. *II* *Eng Munie J* 39:179-83 Ag 5 '15

Light ornamental bridge, Abington, Mass. *II* *Eng N* 74:97 JI 16 '15

Low-water bridges over torrential streams, Bexar co., Texas. T. Bartlett. *II* *Eng Rec* 73:628-30 Ap 1 '15

Methods and costs in constructing the 450-ft. East Fourth street viaduct at Fort Worth, Texas. M. W. Robinson. *II* *Concrete Cem* 6:231-8 D '14

New concrete arch viaduct of the Philadelphia, Baltimore & Washington R. R. over Gwynns Falls, Baltimore. *II* *plans map Ry R* 56:345-8 Mr 13 '15

Ornamental and cheap concrete bridge, Canton City, Colo. R. C. Hardman. *II* *Eng N* 71:241-2 Ag 5 '15

Ornamental bridge at Akron built of slag concrete. *II* *Eng N* 74:769-70 O 21 '15

Ornamental concrete elevated railway, New York city. M. B. Griset. *II* *Eng N* 74:913-18 N 11 '15

Pennsylvania's concrete bridge over the Susquehanna. *Eng Rec* 71:326 Mr 13 '15

Progress on Summit cut-off of the Lackawanna. *II* *Eng Ry Age* 58:235-9 F 5 '15

Reinforced-concrete arch bridge has stone facing. *II* *Eng Rec* 72:164-5 Ag 7 '15

Reinforced-concrete bridge with cantilever abutments; overhead crossing at Hallstead, Pa. *Eng Rec* 70:632-3 D 5 '14

Reinforced concrete bridges. *Ry Age* 59:761-2 O 22 '15

Reinforced concrete bridges along the Columbia highway in Oregon. R. P. Hillner. *II* *Eng Rec* 73:145-8 D 10 '14

Reinforced-concrete cantilever bridges. A. B. Hill. *II* *Eng N* 73:790-2 Ap 22 '15

Reinforced-concrete highway arch for grade separation. *Eng Rec* 70:703-4 D 26 '14

Reinforced-concrete sewer viaduct. E. J. Gilman. *II* *Eng N* 73:1191 Jc 17 '15

Reinforced-concrete viaduct at St. Louis, Mo. C. W. Martin. *II* *Eng N* 74:726-7 O 14 '15

San Francisco Mission street viaduct. A. J. Cleary. *II* *plan Eng N* 73:319 20 F 18 '15

Surface treatment of concrete bridges for railway and highway traffic. A. M. Wolf. *II* *Concrete Cem* 6:169-76 Ap '15

Test of full-size reinforced-concrete bridge slab. *Eng Rec* 71:26 Ja 2 '15

Tests of reinforced concrete structures on the Great Central railway; abstract. J. B. Hall. *Am Soc M* 19 J 37:122-3 F 15 '15

Track depression at Mutton; Illinois Central R. R. *II* *Eng plan Eng N* 71:110-12 JI 15 '15

Track depression at Minneapolis. *Eng N* 73:516-17 Mr 18 '15

Tunkhannock viaduct nearing completion. *II* *Eng Rec* 72:43-3 JI 10 '15

Twelfth street double-deck viaduct at Kansas City. *II* *Eng N* 73:10-15 Ja 7 '15

Unit-construction system applied to a three-mile concrete viaduct to reduce the cost. *II* *Eng plan Eng Rec* 72:218-51 Ag 28 '15

*See also* Trestles, Concrete

**Patents**

Six concrete-bridge patents void on broad grounds. R. M. Lewis. *Eng N* 74:1094-5 D 2 '15

**Bridges, Iron and steel**

Allowing for impact in bridge calculations. J. D. W. Ball. *Eng Rec* 120:161-3 Ag 13 '15

Alloy steels economical for long-span bridges. J. A. L. Waddell. *Eng Rec* 72:386-7 S 25 '15

Comparison of carbon steel and high-alloy steels for bridges. J. A. L. Waddell. *Eng & Contr* 41:686-88; Discussion. 41:688-90; 42:243-4, 496-6 Jc 17, S 9, N 25 '14

Design of the main shoes of the new Quebec bridge. *II* *Eng Rec* 113:527-8 D 4 '14

Details of main span of Detroit-Superior bridge at Cleveland. *Eng Rec* 70:640-1 D 12 '14

Deterioration of steel bridges over railway tracks at Buffalo, R. J. Reidpath. *II* *Eng N* 73:1111-7 Jc 10 '15

Development of the Sudan. *II* *map plans Eng Rec* 119:271-4 Mr 19 '15

Difficult grade crossing elimination in Albany, N. Y. *II* *Eng plan Ry Age* 59:961-3 N 19 '15

Erecting the largest steel arch bridge in existence, Hell Gate, New York. *II* *Sci Am* 113:193 S 4 '15

Erection at Hell Gate arch checks calculations. *II* *Eng Rec* 72:320-1 Ag 21 '15

Erection of new Quebec bridge. H. P. Borden. *II* *Eng Rec* 71:80-1 Ja 16 '15

Erection of steel arch span, Detroit-Superior viaduct. *II* *Eng Rec* N 74:366-7 Ag 19 '15

Erection of the world's greatest steel bridge at Hell Gate. *II* *Iron Tr R* 57:944-5 N 11 '15

Fabricating steelwork for the Hell Gate arch. *II* *Eng Rec* 70:681-6 D 26 '14

Features of a unique bridge over the Bow river in Alberta, Canada. *II* *Eng & Contr* 44:53 JI 21 '15

Harding bridge over the lower Ganges in India. F. C. Coleman. *II* *Eng N* 73:1160-4 Jc 17 '15

Hell-Gate arch bridge and the New York Connecting railroad. *II* *Eng map Ry R* 57:453-61 O 9 '15

Hell Gate bridge in the shop. *II* *Eng N* 72:1116-18 D 3 '14

Largest arch bridge in the world; Hell Gate bridge. *II* *Sci Am* 113:540-1 O 16 '15

Long-span continuous-truss bridge over the Ohio. *Eng N* 74:61-6 JI 8 '15

Longest simple truss span in world to be erected over Ohio river at Metropolis. *Eng Rec* 72:54-4 JI 10 '15; Abstract (Millon steel for bridge construction). *Eng M* 49:913 S 4 '15

New bridge across the Mississippi river at Kookuk. *plans Ry Age* 58:200 Ja 29 '15

New double-deck bridge over the Missouri river at Kansas City. *Eng map Ry Age* 59:281 Ag 15 '15

New methods evolved in building world's largest bridge; Quebec erection. *II* *Eng Rec* 72:96-106 JI 21 '15

97-ft. Hell Gate bridge becomes an arch. *II* *Eng N* 74:708 9 O 7 '15

Notable structures on the Spokane-Ayer cut-off. *II* *Eng Ry Age* 58:623-6 Mr 19 '15

Ohio river bridge for the C. B. & Q. R. R. *Eng N* 71:230-2 JI 29 '15

Pacific highway interstate bridge over the Columbia river and its approaches. E. B. Howard. *Eng Rec* 43:540-3 Ja 16 '15

Pacific highway interstate bridge over the Columbia river at Portland, Oregon. Good Roads N 8 10:61-2 JI 10 '15

Pacific highway interstate bridge over the Columbia river, Portland, Ore. E. B. Howard. *Eng N* 73:1218-21 Jc 24 '15

Pacific highway interstate bridge; special pier and floor design feature. *Eng Rec* 72:18-20 JI 3 '15

Progress of the new Quebec bridge. *II* *plan Eng Rec* 119:101-3 Ja 29 '15

Progress on Hell Gate bridge, New York city. *II* *Eng N* 74:236-7 JI 29 '15

Quebec bridge work in 1915. *II* *Eng N* 71:473-6 S 2 '15

Recent cast-iron bridge decorations. *II* *Eng N* 73:270-1 F 11 '15

Record set for weight of steel erected in one day at Randall's Island on Hell Gate bridge approach. *II* *Eng Rec* 71:399-400 Mr 27 '15

**Bridges, Iron and steel—Continued**

- St. Louis municipal bridge east approach a steel viaduct nearly 3 miles long, diags Eng Rec 72:834-5 N 20 '15
- Steel arch bridge on curved gradient in the Bletsch valley, fl diags Engineer 118:549-50 D 11 '14; Same cond. Eng M 48:750-1 F '15
- Steel bridge standards of the Iowa highway commission, J. F. Kelley, diags Eng Rec 70: 631-2 D 12 '14
- Steel structural engineering, E. Marburg, Eng Rec 71:7-10 Ja 2 '15
- Three-mile approach viaduct, St. Louis municipal bridge, diag Eng N 71:454-5 S 2 '15
- Work on the new Quebec bridge during the first erection season, H. P. Borden, fl Eng N 73:1-4 Ja 7 '15

**Protection**

- Gunite concrete encasement, diags Ry R 56: 120-30 Ja 23 '15
- Protection of metal structures; with discussion, F. H. May, fl diags Eng Soc W Pa 31: 115-93 Mr '15; Abstract, Ry R 57:154 J1 31 '15
- Waterproofing solid steel-floor bridges; abstract, S. T. Wagner, Eng & Contr 13:79-81 Ja 27 '15; diags Ry R 56:273-7 F 27 '15; Discussion, A. W. Carpenter, Ry R 56:557-8 Ap 24 '15

**Bridges, Lift**

- Design and erection of the Pennsylvania lift bridge no. 458 over the south branch of the Chicago river, W. L. Smith and W. W. Priest, fl diags W Soc 13 J 20:478-500 My '15; Same, Ry R 56:519-28 Ap 17 '15; Same cond. Eng Rec 71:611-13 My 15 '15
- Direct-lift span provides 56-foot clearance over Louisville and Portland canal, fl Eng Rec 72:199-200 Ag 14 '15
- Erecting a lever lift bridge, fl Eng N 74:123-1 J1 15 '15
- Lift bridge constructed on 4 per cent. grade in Fairport, N. Y., C. H. Waters, fl Eng N 73:705-6 Ap 15 '15
- Lift spans over Arkansas river designed for possible shifting of channel, fl diags Eng Rec 72:667-70 N 27 '15
- Pacific highway interstate bridge over the Columbia river, E. E. Howard, diags Eng N 73:1218-21 Je 24 '15
- Pacific highway interstate bridge over the Columbia river and its approaches, E. E. Howard, diags Eng & Contr 13:519-3 Je 16 '15
- Special pier and floor design feature Pacific highway interstate bridge, diags Eng Rec 72:14-20 J1 3 '15
- Two large lift bridges at Chicago, diags Engineer 120:339-40 O 8 '15

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**Bridges, Military. See Military bridges****Bridges, Movable. See Bridges, Bascule; Bridges, Lift; Drawbridges****Bridges, Pontoon. See Pontoon bridges****Bridges, Railroad**

- Allowing for impact in bridge calculations, J. L. W. Ball, diags Engineer 120:151-3 Ag 12 '15
- Bridge and building association, 25th annual convention, Ry Age 59:753-84 O 22 '15
- Bridge work of the C. M. & St. P. Ry, fl plan Ry R 56:335-8 Mr 13 '15
- Building concrete abutments in the Platte river, J. H. Merriam, fl diags Ry Age 59:383-6 Ag 27 '15
- Candian Pacific draw span over the Lachine canal, fl Ry Age 59:230 Ag 6 '15
- Chart of equivalent uniform loads for railway bridges, D. H. Steinman, Eng N 73:780-2 Ap 23 '15
- Chesapeake & Ohio Northern railway bridge over the Ohio river at Scottdale, O., diags Eng & Contr 44:34-5 Ag 4 '15
- Completing the summit cut-off of the Lackawanna, fl Ry Age 59:809-10 O 29 '15
- Concrete pier work on the Cumberland valley R. R. bridge over the Potomac, fl Eng N 73: 124-5 Ja 21 '15
- Concrete viaducts on the Pennsylvania railroad, D. A. Willey, fl Sci Am 8 79:24 Ja 9 '15
- Construction of the Gwynna Falls arch bridge, fl diags Ry Age 57:1037-40 I 4 '14

Construction of the Hallstead cut-off, D. L. & W. R. R.; Tunkhannock viaduct and Martin's Creek viaduct, fl diags Ry R 56:143-8 Ja 30 '15

- Data on reinforced concrete railroad bridges and extent to which such bridges are used, diags plan Eng & Contr 13:29-32 Ja 13 '15
- Design and construction of the Langwies viaduct, Chur-Arosa, fl, Langwies, Switzerland, A. M. Wolfe, fl diags Concrete Con 6:239-45 My '15
- Design and erection of the Pennsylvania lift bridge no. 458 over the south branch of the Chicago river, W. L. Smith and W. W. Priest, fl diags W Soc 13 J 20:478-500 My '15; Same, Ry R 56:519-28 Ap 17 '15; Same cond. Eng Rec 71:611-13 My 15 '15
- Design, construction and detailed costs of the Richelieu river bridge, Lacolle Junction, Quebec, fl diags Eng & Contr 42:512-6, 585-9 D 9, 23 '14
- Elastic curve applied to the design of the Scottdale bridge, H. B. Stehman, Eng Rec 72:258-60 Ag 28 '15
- Erecting railroad viaduct superstructure, fl diags Eng Rec 70:668-70 D 19 '14
- Features of the Tunkhannock creek viaduct recently completed at Nicholson, Pa., fl Eng & Contr 44:389-90 N 17 '15
- First French bridge built in war time, W. S. Hatt, fl Ry Age 59:561 S 21 '15
- Lake Erie & Eastern R. R.; concrete arch at Mahoning avenue, Youngstown, fl plan map Ry R 57:132-7 J1 31 '15
- Long-span continuous truss bridge over the Ohio, diags Eng N 71:611-6 J1 8 '15
- Longest riveted simple trusses erected around old bridge by cantilever method at Pittsburgh, fl diags Eng Rec 72:321 J1 17 '15
- Longest simple truss span in world to be erected over Ohio river at Metropola, diags Eng Rec 72:331 J1 10 '15; Abstract 184000 steel for bridge construction, Eng M 19:913 S '15
- Lower Ganges bridge of the Eastern Bengal Ry, fl Ry R 56:661-5 My 15 '15
- Metropola bridge over the Ohio river, diags Ry Age 59:160 J1 23 '15
- New bridge across the Missouri river at Ribby, Mo., fl diags Ry Age 59:141-6 J1 2 '15
- New bridge of the Chicago, Burlington & Quincy R. R. over the Missouri river at Kansas City, Mo., diags Eng & Contr 44:170 S 1 '15
- New bridge over the Thames river, N. Y., N. H. & H. R. R., Ry R 56:23 N 27 '15
- New R. R. & P. structure across Allegheny river at Riverside, N. Y., fl diags Ry Age 58: 815-6 Ap 16 '15
- New Canada-New England railroad link completed; Van Buren bridge route, maps Eng Rec 71:559 My 1 '15
- New concrete arch viaduct of the Philadelphia, Baltimore & Washington R. R. over Gwynna Falls, Baltimore, fl plans map Ry R 56:346-8 Mr 13 '15
- Notable structures on the Spokane River cut-off, fl diags Ry Age 59:623-6 Mr 19 '15
- Ohio river bridge for the C. O. & Q. R. R., diags Eng N 71:270-2 J1 29 '15
- Ohio River bridge to contain longest riveted truss spans in America, diags Eng Rec 71: 799-806 Je 29 '15
- Overloads allowed in operating railroad bridges, J. E. Grother, Eng Rec 72:371 S 25 '15
- Pennsylvania's concrete bridge over the Susquehanna, diags Eng Rec 71:329 Mr 13 '15
- Piecemeal erection of a bridge on the Boston & Maine R. R., R. W. Lenzke, fl diags Eng N 74:1067-9 I 2 '15
- Pontoon railroad bridge across the Panama canal, diags Ry R 56:821 Ja 16 '15
- Practical bridge erection and maintenance methods, fl diags Ry Age 58:1077-82, 10317-51 My 21, 28 '15
- Rail-end connections for bascule bridges, fl diags Eng N 73:1216-17 Je 21 '15
- Rebuilding the Muskingum bridge near Coshocton, fl diags Eng N 74:106-5 J1 10 '15
- Reinforced-concrete bridge with cantilever abutments; overhead crossing at Hallstead Pa., diags Eng Rec 70:622-3 I 5 '14

**Bridges, Railroad—Continued**

- Replacing a large truss bridge by lateral movement. J. C. Bland and J. Miller. *Il Ry Age* 58:460-2 Mr 12 '15
- Solid deck trestles and bridges on the Illinois Central. *Il diags* *Il Ry Age* 59:279-80 Ag 13 '15
- Substructure for new Memphis bridge. M. B. Case. *Il Eng Rec* 71:518-20 Ap 24 '15; Same. *Ry Age* 58:877-81 Ap 23 '15; Same cond. *Ry* 56:554-6 Ap 24 '15; Same cond. *Eng N* 73:792-3 Ap 22 '15
- Track elevation at Lynn, Mass. C. B. Broed. *Il diags* plans *Eng N* 74:533-7 S 16 '15
- Tunkhannock viaduct nearing completion. *Il Eng Rec* 72:42-3 J1 10 '15
- Viaduct construction on the Kansas City terminal. A. R. Witzten. *Il diags* *Ry Age* 58:397-400 Mr 5 '15
- Wind stresses in railroad bridges. R. Fleming. *Eng N* 73:252-6 F 11 '15

*See also* Bridges, Bascule; Elevated railroads; Pontoon bridges; Railroads—Track elevation

**Bridges, Rolling lift. See Bridges, Bascule****Bridges, Stone**

- Proposed centering for large-span stone bridges. H. Berg. *diags* *Engineer* 119:472-4, 521-3, 569-70 My 14, 28, Jo 11 '15

**Bridges, Suspension**

- Wooden suspension foot bridge. *Il Eng & Min J* 98:1000 D 5 '14

**Bridges, Tubular**

- Estimate for a tubular bridge for the Mexican Ry. *Eng N* 73:405 F 25 '15

**Brightness**

- Brightness-difference sensibility of the eye under various brightness of test-fields and surroundings. P. W. Cobb. *J Fr Inst* 180:235-7 Ag '15

- Efficacy of the eye under different conditions of lighting; the effect of varying the distribution factors and intensity. C. E. Ferree and G. Rand. *Il Illum Eng Soc* 10:407-47 no 6 '15

- Further experiments on the efficacy of the eye under different conditions of lighting. C. E. Ferree and G. Rand. *Il plan* *Illum Eng Soc* 10:448-501 no 6 '15

- Good and bad in recent lighting development. J. R. Cravath. *Il Elec W* 66:519-20 S 4 '15

- Methods of expressing brightness. J. R. Cravath. *Il Elec W* 64:1157-8 D 12 '14

- Optical properties of diffusing media. *Illum Eng Soc* 10:353-78 no 5 '15

- Planning of lighting installations. R. F. Pierce. *Il Am Gas Light J* 103:331-2 N 23 '15

- Proposed unit of brightness. *Elec W* 65:715 Mr 20 '15

- Rotational sensibilities related to illuminating engineering. P. C. Nutting. *J Fr Inst* 180:482-4 O '15

- Unit of brightness. H. G. Ivem. *Elec W* 65:460 F 20 '15

- Units of brightness. J. R. Cravath. *Elec W* 66:50-1 J1 10 '15

*See also* Glare

**Briquets**

- Briquets as fuel for house heating boilers. D. T. Randall. *Il Metal Work* 83:847-9 Jo 11 '15

- British Portland cement making machinery; briquetting process. *Il diags* *Engineer* 120:148-51 Ag 13 '15

- Fuel briquetting. *Colliery* 36:45 Ag '15

- Recent developments in coal briquetting. C. T. Malcolmson. *Il Am Inst Min & Ind* 98:271-89 F '15; Discussion. 101:1143-7 My '15

**Briquets (Iron)**

- Briquettes in blast-furnace practice. M. Zullgen. *Iron Age* 94:1394-5 D 17 '14

**Britannia**

- Britannia linings for Hardinge mills. G. B. Collins. *Mot & Chem Eng* 13:650-1 O 1 '15

**Britannic (steamship)**

- White Star liner Britannic. *Il Int Marine Eng* 19:556-9 D '14

**British association for the advancement of science**

- 85th annual meeting, Manchester, Sept. 7-11. *Power* 42:529-30 O 12 '15

- Manchester meeting. *Engineer* 120:268-70, 292-3 S 27 & 28 '15

**British Columbia**

*See also* Mines and mineral resources—British Columbia

**Law**

- Acquiring placer-mining claims in British Columbia. J. A. Macdonald. *diags* *Eng & Min J* 100:757-9 N 6 '15

**British engineers' association**

- 3d meeting, Manchester. *Engineer* 118:578-9 D 18 '14

**Broaching**

- Broaching connecting-rods. *Il Mach* 21:482 F '15

- Broaching operation done in the punch press. F. K. Hudson. *diags* *Mach* 21:493-4 F '15

- 75-ton self-contained hydraulic broaching and forcing press. *Il Ind Eng* 14:401 O '14

**Bromal**

- Action of chloral, bromal and benzaldehyde on the polycyclic hydrocarbons in the presence of aluminum chloride. G. B. Frankforter and W. Kritchewsky. *Am Chem Soc J* 37:385-92 F '15

**Bromides**

- Detection of bromides in the presence of thiocyanates, cyanides and ferrocyanides. L. J. Curtman and A. G. Wikoff. *Am Chem Soc J* 37:298-301 F '15

**Bromonacetates**

- Salts of the halogenoacetic acids. W. G. Bateman and R. B. Conrad. *Am Chem Soc J* 37:2553-60 N '15

**Bronze**

- Applications of metallic cobalt: experiments conducted with cobalt and copper alloys. D. B. Browne. *Metal Ind n* 12:509-10 D '14

- Art of casting from life. W. Bilz. *Il Metal Ind n* 8:1353-4 Ag '15

- Brass and bronze offsprings of copper. J. E. Schipper. *Il map* *Automobile* 33:315-19, 368-70, 412-13 Ag 10-S 3 '15

- Bronze castings as a substitute for steel parts. *Mot & Chem Eng* 13:103-4 Mr '15

- Composition of manganese bronze. *Foundry* 43:315 Ag '15

- Flexible bronze tubing of the Partridge Island pipe line. *Il diags* *map* *Eng N* 73:1167-8 Jo 17 '15

- How titanium-aluminum bronze is produced. C. Vickers. *Il Foundry* 43:273-8 J1 '15

- Manganese-bronze. J. B. Rhodes. *Metal Ind n* 8:13462 N '15

- Manufacture and uses of wrought manganese bronze. J. L. Jones. *Metal Ind n* 8:13410-12 O '15

- Microstructural changes accompanying the annealing of bronze. H. S. Rawdon. *J Fr Inst* 180:607-8 N '15

- Properties of aluminum bronze alloys. W. M. Corse. *Il Foundry* 43:459-60 N '15

- Specifications for government bronze. *diags* *Foundry* 43:260 J1 '15; Same. *Metal Ind n* 8:13273 J1 '15

- Status of the bronze troubles on the Catskill aqueduct. A. D. Elmer. *Eng N* 74:572 S 16 '15

- Titan bronze. *Il Mot & Chem Eng* 13:545-6 S 15 '15

- Titanium aluminum bronze. W. M. Corse and C. Vickers. *Metal Ind n* 8:13190-1 My '15

- Titanium-aluminum bronze castings. W. M. Corse. *Mot & Chem Eng* 13:511-12 Ag '15

- What is phosphor-bronze? *Foundry* 43:69-70 F '15

**Bronzes**

- Bronze in history-making: an ancient figured bronze door reveals the aerial-navigation engineering of antiquity. L. Lodian. *Il Metal Ind n* 8:1351-3 F '15

- Molding and casting a bronze monument. W. N. Nelly. *Il Metal Ind n* 8:1333-4 Mr '15

**Bronzing**

- Bronzing processes suitable for brass and copper. T. I. Baker. *Metal Ind n* 8:13464-5 N '15 (to be cont)

**Brooklyn, New York****Rapid transit**

- Brooklyn rapid transit. *Ry Age* 59:223-4 Ag 6 '15

- Traffic congestion problem. W. H. Messenger. *Il Mach* 21:49-50 N '15



**Brooklyn, New York—Continued****Sanitary affairs**

Experimental plant for treating sewage. G: T. Hammond. *Il Munic Eng* 47:427-30 D '14

**Water supply**

Works for the collection of a ground water supply at Brooklyn. W: F. Lause. *Eng & Contr* 44:225 S 22 '15

**Brooklyn bridge**

Six etchings of Brooklyn bridge, by H. De Ville; text by M. Stapley. *Arch Rec* 38:583-91 N '15

**Brooklyn children's museum**

Children's museum. *Sci Am* 113:250 Mr 13 '15

**Brooklyn rapid transit company**

Annual report. *Rty Age* 59:259-62 Ag 6 '15  
Commission report of service—company's reply. *Ellec Rty J* 45:108-9 Ja 9 '15  
Modern railway school. *Il plans Ellec Rty J* 46:344-53 Ag 28 '15

**Brooms**

Manufacturing brooms. B. N. Lewis. *Il Rty Age (Mech ed)* 89:407-8 Ag '15

**Brownian movements**

Motion films of molecular movements. *Il Ellec W* 66:708 N 25 '15

**Brushes (electric machinery)**

Brush-holder practice for single-phase motors. R. R. Potter. *Il diag Ellec Rty J* 46:408-9 S 4 '15

Graphite brushes. *Colliery* 36:167-8 O '15

Preventing burning of the top of brushes. R. H. Parsons. *diag Ellec Rty J* 46:917-18 O 30 '15

Schwoitzer multiplex brush for commutators and collector plugs. *Il Ellec R & W Ellec'n* 67:382 Ag 28 '15

Troubles encountered in the operation of carbon brushes in direct-current generators and motors. B. H. Martindale. *Il Am Inst E E* 19:34:373-84 Mr '15; Same cond. *Power* 41:558-9 Ap 20 '15; Same cond. *Engineer* 119:468-9 My 7 '15; Same cond. (Causes of poor commutation and remedies). *Ellec W* 65:863-4 Ap 3 '15; Discussion. *Am Inst E E* 19:34:296-674 D '15

Bubbling fountains. See Drinking fountains

**Buckets**

Trownholst-Slinable patent drag-line bucket. *Il Rty J* 45:249-50 Ag 21 '15; *Eng & Contr* 43:580-1 Je 30 '15; *Rty Age* 59:125-6 J 16 '15

Dippers for steam shovels and dredges. *Eng N* 73:80 Ja 14 '15

N. P. pump bucket. *Engineer* 118:506 N 27 '14

Buckeye-mobile. See Locomobiles

**Budgets**

Annual budget. W: T. Childs. *Munic J* 39:515-7 O 7 '15

National budget making. *Munic J* 39:695 7 N 4 '15

**Buenos Aires**

Water supply and drainage in Argentina. A. Dale. *Il Metal Work* 84:103-6 J 23 '15

**Buffalo, New York****Bridges**

Design and construction of the substructure of the Buffalo river lift bridge. *Il diag Eng & Contr* 44:382-5 N 10 '15

Deterioration of steel bridges over railway tracks at Buffalo. R. J. Reidpath. *Il diag Eng N* 73:144-7 Je 10 '15

**Industries and resources**

Buffalo and Niagara Falls and their industries. *Il Am Soc M E J* 37:vi-x My '15

**Railroads**

Lackawanna passenger terminal at Buffalo. *map Eng Rec* 71:334-6 Mr 13 '15

Proposed passenger terminals at Buffalo. *Il plan Rty J* 46:338-40 Mr 13 '15

**Rapid transit**

Buffalo's railway facilities; sketch of past and present conditions. R. J. Dickson. *Ellec Rty J* 46:135-6 Ja 16 '15

**Sanitary affairs**

Buffalo sewage disposal and water-supply in relation to the pollution of the Great Lakes. *Eng N* 73:8-9 Ja 7 '15

**Water supply**

Use of liquid chlorine at Buffalo water-works intake. H. E. Wagner. *Il diag Eng N* 73:856-7 My 6 '15

**Buffalo, Rochester & Pittsburgh railway**

30th annual report. *map Rty Age* 59:310-11, 370-2 Ag 20 '15

**Buffet cars**

Baggage-buffet cars for the Union Pacific R. *Il diag Rty J* 46:59-10 Ja 2 '15

Café day coach. *Il Rty Age* 59:57-8 J 19 '15

Buffing. See Grinding and polishing

**Builders' exchanges**

Convention of National association of builders' exchanges. *Blldg Age* 37:33-7 Mr '15  
Meeting of Ohio builders' exchanges. *Blldg Age* 37:47-9 Mr '15

**Building**

Building methods on the Pacific coast. *Il Blldg Age* 37:51-60 D '15

Chicago's 1914 progress in building. *Il Blldg Age* 37:46-8 F '15

Construction management. S. E. Thompson and W. O. Lichtner. *Il diag W Soc E E J* 20:109-20 F '15; Same cond. *Eng & Contr* 43:428-32 My 12 '15; Discussion. *W Soc E E J* 20:129-31 F '15

Co-operation in small building development. P. H. Bosworth. *Concrete Con* 6:12 Ja '15

Electric drive in building construction. *Il Ellec W* 65:575 Mr 13 '15

Erecting a building under a tent in winter. *Il Eng N* 73:391 F 25 '15

Fastenings for stone or steel. H. M. Schember. *Il diag Blldg Age* 37:39 70 F '15

Heating trade wants six inch studs. *Blldg Age* 37:61 J '15

How a large truck roof was raised. J. E. Hobart. *Il Blldg Age* 37:36 39 My '15

Notable church remodeling operation. *Il Blldg Age* 37:19 22 Ag '15

Panama Pacific international expedition; large-scale time limited construction problems. E. P. Leedy. *plan Iron Age* 95:79-81 Ja 7 '15; Same cond. *Eng N* 73:891 2 Mr '15

Planning for daylight and sunlight in buildings; with discussion. L. B. Marks and J. E. Woodwell. *Bllding Il diag Blldg Eng Soc* 3:613-86 no 7 '14

Profitable specialty building to "adjust" for fire insurance companies. G. L. Chubb, Jr. *Blldg Age* 37:61 2 F '15

Protection from earthquake. T. Moens. *Sci Am* 57:39-50 F 6 '15

Remodeling a frame station building. H. H. See. *Il plan Blldg Age* 37:73 6 Jo '15

Residence construction in Indiana. J. F. Hobart. *Il plan Blldg Age* 37:17 22 O '15

Special details in reinforced concrete and steel building construction. L. W. Truck. *Eng & Contr* 44:113 4 Ag 2 '15

See also Acoustics, Architectural, Arches, Architecture, Automobiles, Boat construction, Bricklaying, Bridges, Building materials, Building stone, Building, Carpentry, Cellulose, Chimneys, China cloths, Concrete construction, Cranes, Concrete, Electrician, Factories, Fibreboard construction, Floor, Foundation and, Foundations, Framing (building), Girders, Gravel, Gulls, Heating, Hot water, Hoses, Laundry, Office buildings, Pathways, Piles, Photo and photography, Plumbing, Roads, Scaffold ing, Shoring and underpinning, Sidewalks, Steel construction, Stumps and stumps, Strength of materials, Trusses, Ventilation, Walls, Windows

**Accounting**

Accounts for material on engineering construction. L. H. Allen. *J Account* 19:352 8 M '15

**Cost**

Building construction costs. W. W. Christ. *Textile World* 48:577 8 M '15

Cost of schoolhouse construction, with a proposed unit based on cubical contents. E. J. Baldwin. *Heat & Vent* 12:22 7 Jo '15

**Building—Cost—Continued**

- Design, construction and detailed labor costs of car shops for Omaha & Council Bluffs street railway co., Omaha, Neb. W. L. Fulton. diag plans Eng & Contr 44:204-6 O 6 '15
- Estimating the cost of mill buildings. C. F. Dingman. Eng & Contr 44:185 S 8 '15
- Figures of comparative building costs. Bldg Age 37:31-2 Je '15
- Labor costs in building construction. E. W. Robinson. il diag plan Bldg Age 37:31-4 S '15
- Modern schoolhouse; cubage and cost. W. H. Kilham. il plans Brickb 24:107-10 My '15
- Why this is the time to build. il Iron Tr R 56:511-13 Mr 11 '15
- See also* Bridges—Cost; Concrete construction—Cost

**Estimates**

- Checking lists for estimators on building work. L. A. Waterbury. Eng & Contr 43:364-6 O 14 '14
- Quantity system of estimating. D. S. Hallantine. Bldg Age 37:41 Jl '15
- Suggestions for estimating mill work. Bldg Age 37:35-6 N '15

**Materials**

*See* Building materials

**Tables, calculations, etc.**

- Facilitating timber design; tables and diagrams used in connection with the structural work on the New York state building, Panama-Pacific exposition. S. Diamant. Eng Rec 71:206-7 Mr 6 '15
- Tables for determining the bending moments and shears in simple beams and in beams fixed at one and both ends. S. M. Colten. Eng & Contr 43:335-40 Ap 11 '15

**India**

- British India; building construction. il S Sp Cons Rep 72:169-75 '15
- Building a genuine Indian bungalow. A. R. Smith-Roy. Bldg Age 37:65-6 Je '15

**Building contracts**

- Arbitration provision for building contracts. R. T. Thurston. Eng & Contr 43:199 Mr 3 '15
- Change of site does not affect contract. W. B. Kling. Eng Rec 71:332 Mr 13 '15
- Contradicting written agreements. A. L. H. Street. Bldg Age 37:45-6 Je '15
- Discussion of some legal principles of interest to engineers. W. L. Bowman. Eng & Contr 42:552-3 D 16 '14
- Does millwork include glass? A. L. H. Street. Bldg Age 37:32 Ja '15
- How courts read building contracts. A. L. H. Street. Bldg Age 37:63-4 Jl '15
- Important legal decisions in 1914. A. L. H. Street. Bldg Age 37:49-50 R '15
- Law points in building contracts. A. L. H. Street. Bldg Age 37:51-2 Ag '15
- New form of government contract. R. D. Meout. Eng N 74:109 Jl 15 '15
- New standard documents. W. S. Parker. Am Inst Arch J 3:300-3, 346-51, 388-92, 439-43 Jl-O '15
- Problem of extras. Concrete Cem 5:255 D '14
- Should details be furnished before a contract is signed? C. A. Wright. Bldg Age 37:66 N '15
- Standard documents of the American Institute of architects; with forms. Am Inst Arch J 3:supl-7 R '15

*See also* Bridge contracts

**Building data league**

- Organization. Eng W 66:30 Jl 3 '15; Heat & Ven 12:33 Jl '15; Eng N 74:281 Ag 5 '15

**Building failures**

- Unriveted steelwork collapses in Toledo gale. il Eng Rec 71:507-8 Ap 17 '15
- See also* Bridge failures; Concrete construction—Failures; Dam failures

**Building laws**

- Architects as independent contractors. A. L. H. Street. Bldg Age 37:54-5 N '15
- Architects versus engineers; Illinois engineers win fight for legal recognition. Assn Eng Soc J 54:277-80 Jo '15

- Building-area, height and other limitations to use of private city property compiled. N. P. Lewis. Eng Rec 72:597-8 N 13 '15
- Building code regulation of concrete block and other building units. H. Whipple. Concrete Cem 5:181-4 Ap '15
- Chicago flat-slab ordinance; discussion. Eng N 72:1274-7 D 24 '14
- Cleveland bases stairway regulations on studies. Eng Rec 72:360 Ag 28 '15
- Community stupidity; how real-estate promotion creates congestion and reduces values. F. L. Ackerman. plans Am Inst Arch J 3: 193-7 My '15
- Discussion of the Indiana housing law. A. F. Wickes. Am Inst Arch J 3:187-8 Ap '15
- Enforcement of Wisconsin building code. Eng Rec 70:626 D 5 '14
- How Cleveland fixes sizes of courts and yards. plan Eng Rec 71:614 My 15 '15
- New ruling on reinforced concrete flat slab construction by building department of Chicago. Eng & Contr 42:330 O 7 '14
- New York's revised building code. Bldg Age 37:31-2 Ag; 59-60 O '15
- Ordinance on fire safeguards. Eng N 74:429-30 Ag 26 '15
- Planning for daylight and sunlight in buildings with table of building height limits. L. B. Marks and J. B. Woodwell. Illum Eng Soc 9:615-7, 667 no 7 '14
- Proposed state building code for Illinois. Eng & Contr 42:451 N 11 '14
- Regulation of concrete block manufacture and use. Concrete Cem 5:208-9 Ap '15
- Résumé of plumbing requirements of New York, Chicago, Philadelphia, and Boston. C. A. Whittemore. Brickb 21:197-200 Ag '15
- Shingle roofs and fire limits. W. B. Conant. Munic J 38:189-90 R 11 '15
- Theory and practice in writing building laws. J. A. Ferguson. Eng Soc W 1'n 30:130-68 Mr '14; Excerpt. Eng & Contr 42:222-5, 265-6 S 2, 16 '14; Discussion. Eng Soc W 1'n 30:169-90 Mr '14
- Wind-bracing requirements in municipal building codes. il. Fleming. Eng N 73:485-7 Mr 11 '15
- See also* Fireproof construction; Garages—Laws and regulations; Heating—Laws and regulations; Plumbing laws and regulations
- Building materials**
- Air permeability of building materials; abstracts. il. von Thellmann. Am Soc M 16 J 37:377-8 Ag '15; Heat & Ven 12:14-5 S '15
- American society for testing materials holds annual meeting in Atlantic City. Eng Rec 72:28-9 Jl 3 '15
- Establishment of a standard for transmission losses from buildings of all constructions. il. P. Bolton. Heat & Ven 12:19-23 Jl '15; Same. Dom Eng 73:254-6 N 27 '15; Same. cond. Metal Work 84:373-4 S 17 '15
- Heat losses by transmission through various building materials. L. A. Harding. Am Soc Heat & V 19:208-18 '13
- Laboratory freezing tests. il. Perrine. diag Concrete Cem 5:256-7 D '14
- See also* Asbestos; Bricks; Building stones; Cement; Concrete; Concrete, Reinforced; Concrete blocks; Concrete bricks; Concrete stone; Fire resisting materials; Fireproof construction; Glass; Hollow tile; Iron; Lime; Mortar; Plaster and plastering; Sheet metal; Steel, Structural; Strength of materials; Stucco; Tiles; Timber; Wood
- Building moving**
- Fifteen hundred-ton country club moved 1200 feet. il Eng Rec 71:594 My 29 '15
- Planting a clubhouse to a new site. il Eng N 73:589-90 Mr 25 '15
- Heavy car dumping plant moved 214 feet in 2½ days. il Eng Rec 71:49 Ja 9 '15
- Large steel tanks cut in two for removal on barge. il Eng Rec 71:278 R 27 '15
- Moving large steel grain tanks. il Sci Am 113: 185 Ag 28 '15
- Moving reinforced-concrete hotel in San Francisco. A. D. Phares. il Eng Rec 71:289-90 Mr 6 '15
- Notable church remodeling operation. il Bldg Age 37:19-22 Ag '15
- See also* Bridge moving

**Building stones**

Stone production in the United States, 1901-1913. *Eng Rec* 70:643 D 12 '14

Testing of building stone in Canada. *Engineer* 120:18 J1 2 '15

*See also* Limestone

**Building trades**

Building operations in 1914. *Bldg Age* 37:37 O '15

Changes in the building business. M. C. Tuttle. *Eng N* 73:1034-5 My 27 '15

Making the building business profitable. *Bldg Age* 37:22, 24 Ap '15

Review of building situation in 1914. *Bldg Age* 37:77-8 F '15

Should the builder carry a stock? G. D. Crain, Jr. *Bldg Age* 37:57-8 Ap '15

**Buildings**

Buildings-factor costs. H. L. Green. *Eng M* 43:407-10 D '14; *Same*. *Eng & Contr* 43:101-2 F 3 '15

Electrical construction details of Butler brothers building, Chicago. N. G. Meade. *Bldg Age* 37:11-12 & W *Eng N* 66:1183-90 Je 26 '15

Hill building; special design for special use. *Bldg Age* 37:1241-8 D 24 '14

*See also* Association buildings; Bank buildings; College buildings; Engineering buildings; Factories; Hotels; Industrial buildings; Market buildings; Municipal buildings; Office buildings; Printing offices; Railroads—Buildings; Schoolhouses; Theaters; Warehouses

**Cleaning**

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**Repair**

Preliminary repair work on the Edison concrete buildings. *Bldg Age* 37:89-91 Ja 14 '15

Rebuilding Edison's great plant. *Sci Am* 112:50 Ja 9 '15

Reinforcement for the roof timbers of Westminster Hall, England. F. Palmer. *Eng & Contr* 42:172-5 Ag 19 '14

Repair of concrete buildings at Edison plant sets precedents in construction work. *Bldg Age* 37:503-6 Ap 17 '15

Repairing building supports and foundations with concrete. *Bldg Age* 37:545-6 Ja '15

Restoration of old buildings. W. A. Forsyth. *Eng & Contr* 44:310 O 20 '15

**Buildings, Industrial. See Industrial buildings****Buildings, Portable**

Construction of a movable greenhouse. *Bldg Age* 37:89-71 Ag '15

Portable buildings of monolithic reinforced concrete. *Bldg Age* 37:1255 D 21 '14

**Bulkheads**

Bulkhead to retain soft fill. *Bldg Age* 37:942-3 My 13 '15

Design suggested for shore-protection works on the New Jersey coast. B. F. Crossman, Jr. *Bldg Age* 37:504-5 My 6 '15; *Eng Rec* 71:547-8 My 1 '15

Hunt's Point terminal in New York involves difficult bulkhead construction. *Bldg Age* 37:104-6 J1 24 '15

Movable bulkhead for testing steel pipe line in sections after erection. *Bldg Age* 37:104-6 J1 24 '15

New coal dock for the Cincinnati Hamilton & Dayton Ry. at Toledo; plan. *Eng N* 73:227 Ag 21 '15; *Same*. *Eng Rec* 72:103 Ag 7 '15

Novel bulkhead for wharves at Jacksonville. H. D. McDonnell. *Bldg Age* 37:104-6 J1 24 '15

Special features in the new intake tunnel at Milwaukee. L. G. Warren. *Bldg Age* 37:104-6 J1 24 '15

Steamship terminal in the Bronx. *Bldg Age* 37:104-6 J1 24 '15

**Bulkheads, Mine. See Mine bulkheads****Bulkheads (naval architecture). See Naval architecture****Bullets**

Bullets of the fighting nations. *Sci Am* 112:400-1 My 1 '15

Dum-dum bullets. E. C. Crossman. *Sci Am* 112:368 Ap 17 '15

High-speed bullets and dumdums. *Sci Am* 112:368 Ap 17 '15

How rifle bullets fly. E. C. Crossman. *Sci Am* 112:368 Ap 17 '15

Making shrapnel bullets. *Mach* 21:649-50 Ap 15 '15; *Same*. *Sci Am* 80:30 J1 10 '15

Penetration of bullets. E. C. Crossman. *Sci Am* 112:368 Ap 17 '15

Rifle and its bullet. H. L. Heussner. *Bldg Age* 37:104-6 J1 24 '15

*See also* Projectiles; Shells; Shrapnel shells

**Bumped heads. See Boiler heads****Bumping blocks**

Bumping posts that do the work demanded. *Bldg Age* 37:104-6 J1 24 '15

High concrete bumping blocks. B. & O. R. R. *Bldg Age* 37:104-6 J1 24 '15

**Bungalows**

Building a genuine Indian bungalow. A. R. Sarath-Roy. *Bldg Age* 37:85-6 Je '15

Bungalow costing \$1000. *Bldg Age* 37:37-30 Ja '15

Bungalow of the California type. *Bldg Age* 37:53-4 D '15

Hints for the building of bungalow. J. C. Demsey. *Bldg Age* 37:52-4 S '15

Low-cost hollow the bungalows. *Bldg Age* 37:31-6 D '15

Plumbing and heating in California bungalow. A. C. Shaver. *Bldg Age* 37:104-6 J1 24 '15

Popular bungalow-court idea; layout and description of St. Francis court at Pasadena. C. A. Byers. *Bldg Age* 37:104-6 J1 24 '15

Southern home of bungalow type. *Bldg Age* 37:104-6 J1 24 '15

Summer cottage in the Maine woods. C. A. Byers. *Bldg Age* 37:104-6 J1 24 '15

**Bunsen burners**

Distribution of gases in the bunsen flame. *Sci Am* 112:470 My 22 '15

**Buoys**

Lighthouse illumination. R. Haskell. *Illum Eng Soc* 10:215-17 no 3 '15

**Buret reader**

Simple buret reader. L. S. Pratt. *Chem Am Soc* 37:1730-1 J1 '15

**Burets**

Simple automatic zero burette. A. T. Merten. *Eng J Ind & Eng Chem* 7:786 T S '15

**Burke relief foundation, White Plains, N. Y.**

Burke relief foundation for convalescents. White Plains, N. Y. *Bldg Age* 37:317-23 S '15

Winifred Motterson Burke relief foundation, White Plains, N. Y.; views and plans. *Bldg Age* 37:317-23 S '15

**Burma**

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**Industries and resources**

Bawdwin mines of the Burma corporation. *Bldg Age* 37:104-6 J1 24 '15

Wolframite in lower Burma. E. M. Leffroy. *Eng & Min J* 99:684 Ap 17 '15

**Burners**

Adjustable burner for liquid fuel. *Eng Am Soc M E J* 37:118-19 F '15

Candle oil as fuel in heating system. H. S. Hales. *Eng Am Soc M E J* 37:118-19 F '15

*See also* Bunsen burners; Gas burners; Oil burners

**Burnham, Daniel Hudson, d. 1912**

Burnham as a pioneer in city planning. W. E. Parsons. *Arch Rec* 35:13-51 J1 '15

Daniel Hudson Burnham and his associates. P. H. Wright. *Arch Rec* 35:13-51 J1 '15

Work of Burnham & Root. D. H. Burnham. D. H. Burnham & Co. and Graham, Burnham & Co. A. N. Robert. *Arch Rec* 35:13-51 J1 '15

*See also* Burnham & Co. and Graham, Burnham & Co. A. N. Robert. *Arch Rec* 35:13-51 J1 '15

**Burroughs adding machine co.**

Workmen's co-operation reduces accidents. *Iron Age* 95:1061-4 My 13 '15

**Busbar supports**

Hangers and wall bushings for storage-battery busbars. *Elect W* 66:1206 N 27 '15

**Busbar supports—Continued**

Improved disconnecting switches and busbar supports for large generating plants. *Ellec R & W Elec'n* 67:728-31 O 16 '15; *Ellec W* 66:883-4 O 16 '15  
 Special three-way busbar supports. *El diag* *Ellec R & W Elec'n* 66:358 F 20 '15

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**Buses, Jitney.** See *Jitney buses*

**Buses, Motor.** See *Motor buses*

**Bushings**

Machining bushings on the drill press. *W. H. Sawtell. El diag* Mach 21:1012 Ag '15  
 Machining thin bronze bushings. *A. A. Dowd. diag* Mach 21:980-2 Ag '15  
 Mushroom gates and risers. *Foundry* 43:69 F '15

**Bushman**

Bushman of the Moorl river, Natal. *D. Waterston. El Sci Am* 113:191 F 27 '15

**Business**

Address before the A. M. R. A. W. Wilson. *Ellec Rty J* 45:275-8 F 6 '15; Same cond. *Ellec W* 65:368-9 F 6 '15; Abstract. *Ellec Rty J* 45:217-18 Ja 30 '15  
 Better business building blocks. *G. R. Adams. Dom Eng* 73:105-7, 143-4 O 23-30 '15; Same cond. *Metal Work* 84:533-5 O 23 '15  
 Business man and Congress. *L. W. Moffett. Iron Tr R* 55:1229-30 I 31 '14  
 Business questions considered by the Chamber of commerce of the United States. *Iron Age* 95:354-5 F 11 '15  
 Destructive and constructive regulation of business. *It. R. Lounsbury. Am Ind* 16:10-13 Ag '15  
 Modern commercial distribution. *Am Gas Light J* 103:135, 138-9 Ag 30 '15  
 Money and time saving recording systems; reading of trade journals and books. *It. T. Gebler. Metal Work* 84:300-2 S 3 '15  
 Organized business methods needed. *J. H. Fahey. Metal Work* 84:43 J 9 '15  
 Small corporation a pitfall. *J. L. Smith. Eng M* 49:672-8 Ag '15  
 Value of friendship in business. *E. A. Roberts. Illig Age* 37:35 Ag '15

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**Business cards**

Business-cards a few suggestions. *J. L. Frazier. Inland Pr* 56:65-8 O '15

**Business conditions**

Address delivered before the Youngstown chamber of commerce. *T. W. Robinson. Iron Tr R* 56:934-6a My 6 '15; Same cond. (Read to better business conditions) *Iron Age* 95:1000-1 My 6 '15

Better business conditions and permanent prosperity. *Rty R* 57:598-9 N 6 '15

Business conditions; abstracts. *W. H. Gary. Iron Age* 95:1240-2 Jo 3 '15; *Iron Tr R* 56:1119-21 Je 3 '15

Business from manufacturers' standpoint in Middle West. *Metal Work* 83:71-3 Ja 1 '15  
 Foreign and domestic commerce and business generally. *J. A. Farrell. Eng Soc W* 1'n 31:223-8 Mr '15

Has the tide turned? *R. W. Babson. Brickb* 23:311-12 I 14 '14

How is business? comment by manufacturers. *Ellec R & W Elec'n* 67:413-16 S 4 '15

Outlook in other industries; comment by editors of various trade publications. *Ellec R & W Elec'n* 67:417-27 S 4 '15

Railways and prosperity. *A. L. Mohler. Rty R* 56:181-2 F 6 '15

Sane optimism. *C. M. Lemporly. Metal Work* 82:781 I 11 '14

Supply manufacturers and dealers meet. *Iron Age* 95:1290-3 Jo 10 '15

See also Business depression

**Business correspondence.** See *Commercial correspondence*

**Business depression**

Letters of Messrs. Tripp and Matthews on business conditions. *W. F. Hickernell. Ellec W* 65:972-3 Ap 17 '15  
 Present industrial depression. *G. E. Tripp. Ellec W* 65:11-12 Ja 3 '15; Discussion. *C. L. Matthews; G. E. Tripp. Ellec W* 65:17-18 F 27 '15

See also Panics

**Business education**

Business college graduate in the business field. *J. P. Joplin. J Account* 19:182-90 Mr '15

**Business ethics**

See also Competition

**Business law.** See *Commercial law*

**Business men**

Administration and business men. *L. Cromwell. Textile World* 49:240-2 My '15  
 Business men and public service. *Ry R* 55:688-90, 710-18, 775-7; 56:93-6, 127-9, 193-4, 207-8 I 5-12, 26 '14, Ja 16-23, F 6-13 '15  
 Government's business. It needs regulation by business men. *Ry R* 55:746-8 D 19 '14

**Butane**

Vapor pressures of propane, propylene and normal butane at low temperatures. *G. A. Burrell and L. W. Robertson. Am Chem Soc J* 37:2188-93 S '15

**Butchart rifle system**

Development of the Butchart rifle system at Morenci, D. Colo. *El diag* *Am Inst Min E* Jul 98:131-41 F '15; Excerpt. *Metal Work* 84:332 My '15; Discussion. *Am Inst Min E* Jul 101:1123-8 My '15

**Butler brothers, Chicago**

Electrical construction details of Butler brothers building. *N. G. Menck. El diag* *Ellec R & W Elec'n* 66:1183-90 Jo 26 '15

**Butte, Montana**

Occurrence of covellite at Butte. *A. P. Thompson. El Am Inst Min E* Jul 100:645-77 Ap '15; Discussion. 108:2464-71 I '15

**Butte, Anaconda & Pacific railway**

Contact system of the Butte, Anaconda & Pacific railway. *J. B. Cox. El diag* map *Am Inst Min E* Pro 34:1447-76 Ag '15; Same. *Gen Ellec R* 18:812-59 Ag '15; Abstract. *Ellec Rty J* 46:50-60 Ji 10 '15

Electrical operation of the Butte, Anaconda & Pacific railway. *J. B. Cox. El diag* map *Am Inst Min E* Pro 33:1729-53 N '14; Same. *Gen Ellec R* 17:1047-65 N '14; Abstract. *Ellec Rty J* 44:1050-1 N 7 '14; Discussion. *Am Inst Min E* Pro 34:134-43 Ja '15

One year's electrical operation of the B. A. & P. *J. B. Cox. Rty Age* 57:1193-5 I 25 '14  
 Results of B. A. & P. railway electrification. *Eng & Min J* 99:529-30 Mr 29 '15

**Butte & Superior copper co.**

Report for 1914. *Eng & Min J* 99:1081 Je 19 '15

**Butter, Substitutes for**

Modern substitutes for butter. *Sci Am S* 80:27 Ji 10 '15

**Butter fat**

Apparent effect of acetic acid upon the constituents of butter fat. *C. Bahlman. J Ind & Eng Chem* 7:680-1 Ag '15

Determination of fat in ice cream by the Babcock method. *C. A. A. (It. J Ind & Eng Chem* 7:773 S '15

Device for the successive determination of the solids and fat in milk and other fluids. *A. Seldenberg. J Ind & Eng Chem* 7:769-73 S '15

**Butternut**

Butternut trees as a wood eradicator. *Sci Am* 112:130 F 6 '15

Use of native woods for interior finish. *C. M. Price. El Brickb* 24:241-2 O '15

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**Cabinet work**

Cabinet work for the carpenter. *P. D. Otter. diag* *Illig Age* 37:49-50 N '15

See also Furniture; Sewing cabinets

Cable-laying machine. *Il Elec W* 65:41 Ja 2 '15

#### Cable railroads

Two-car trains on 25 per cent grade. *diags Elec Ry J* 45:977-8 May 22 '15

#### Cables

Mechanical cable connectors. *Il Elec Ry J* 45: 1216-17 Je 26 '15

New grips for cables and wires. *Il Iron Age* 96: 418 Ag 19 '15

Service and tests of Mayari incline cables; abstract. *J. E. Little. Am Soc M E J* 37: 236-7 Ap '15

Service and tests of 3-in. wire cable. *Eng N* 73:685 Ap 8 '15

Steel cable grip. *Il diags Elec R & W Elec'n* 66:1210 Je 26 '15

Wire cables of various types and materials tested by U. S. Bureau of standards. *Il diags Eng Rec* 72:567-8 N 6 '15

See also Cable railroads; Cableways; Electric cables; Ropes; Wire

Cables, Electric. See Electric cables

#### Cables, Submarine

Cable-repairing steamer "Transmitter." *F. C. Coleman. Il plan Int Marine Eng* 20:382-6 S 15

French-built cable ship Edouard Jéramac. *F. C. Coleman. Il diags Int Marine Eng* 20: 146-50 Ap '15

Mobilizing news. *C. E. Crane. Il Sci Am* 112: 134-5 R 6 '15

Submarine cable installation across Wallabout canal. *Il Elec Ry J* 45:805 Ap 24 '15

Submarine cable rapid telegraphy; ocean and intercontinental telephony. *B. Gull. Il diags Am Inst E E Pro* 34:2401-29 S 15

Unbroken alternating current for cable telegraphy. *G. O. Squier. diags J E Inst* 180: 511-34 S 15; Abstract. *Elec W* 66:299-300 Ag 7 '15

#### Cableways

Aerial ropeways. *Il diags Engineer* 119:53-5, 108-10, 223-5, 352-5, 376-6 Ja 15, 29, Mr 5, Ap 9-16 '15

Aerial ropeways. *Il: Davies. Engineer* 119:141 R 5 '15

Cableway carries curved reinforcing bars up steep hill. *G. W. Davidson. Il Eng Rec* 72: 492 O 16 '15

Cableway coaling station. *Il plans Ry Age* 68:336 R 19 '15

Design and construction of aerial ropeways. *diags Engineer* 120:79-81 Jl 23 '15; *Excerpt (Power for driving) Eng & Min J* 100:393 S 4 '15; *Excerpt (Traction rope) Eng & Min J* 100:475 S 18 '15; *Excerpt (Track ropes) Eng & Min J* 100:518 S 25 '15

Limpine cableway is an effective tool for sand and gravel plants. *Il Eng Rec* 71:716-18 Je 5 '15

Islanding construction material by aerial tramways. *diags Eng N* 72:1170-1 D 10 '14

Hoist on revolving headframe operates drag-line. *diags plan Eng Rec* 71:742-3 Je 12 '15

Home-made cableway changes shuffling on caisson job. *H. D. Hammond. Il Eng Rec* 72: 147-8 Jl 31 '15

Temporary travelling cableway at Goldfield mines. *Il Eng N* 71:763-4 O 14 '15; *Same. Eng & Min J* 100:673 O 23 '15

Unique conveyor in automobile plant. *Il plan Iron Age* 96:565-8 S 9 '15

See also Conveying machinery; Suspended railways; Telferage

Caboose cars. See Cars, Caboose

Cabriolet. See Automobiles - Bodies

#### Cadmium

Atomic weight of cadmium. *G. A. Hulet and R. L. Quinn. Am Chem Soc J* 37:1997-2000 S 15

Reproducibility of the cadmium electrode. *F. H. Getman and V. L. Gibbons. Il Am Chem Soc J* 37:953-70 My '15

Revision of the atomic weight of cadmium: the electrolytic determination of cadmium in cadmium chloride. *G. P. Baxter and M. L. Hartmann. Am Chem Soc J* 37:113-21 Ja '15

#### Cadmium chloride

Revision of the atomic weight of cadmium: the electrolytic determination of cadmium in cadmium chloride. *G. P. Baxter and M. L. Hartmann. Am Chem Soc J* 37:113-21 Ja '15

#### Cadmium iodide

Study of alcoholic solutions of cadmium iodide. *F. H. Getman and V. L. Gibbons. Am Chem Soc J* 37:1990-6 S 15

#### Caesium chloride

Ionic hydration and transference numbers of caesium chloride. *R. W. Washburn and R. R. Millard. Am Chem Soc J* 37:694-9 Ap '15

#### Caffein

Estimation of caffeine and antipyrin in admixture. *W. C. Emery and S. Palkin. J Ind & Eng Chem* 7:519-21 Je '15

#### Cairo, Egypt

##### Bridges

New swing bridge over the Nile at Cairo. *Il diags Engineer* 120:270-2, 274 S 17 '15

##### Sewerage

New sewerage system of Cairo, Egypt. *diags Eng N* 74:545 S 16 '15

#### Caissons

Balboa docks. *Il Sci Am* 112:18 Ja 9 '15

Building concrete caissons in the Platte river. *J. H. Merriam. Il diags Ry Age* 59:383-6 Ap 27 '15

Home-made cableway changes shuffling on caisson job. *H. D. Hammond. Il Eng Rec* 72:147-8 Jl 31 '15

Lock entrance caisson for the Panama canal. *L. A. Mason. Il diags plan Gen Elec R* 18: 210-15 Mr 15 '15; *Same cont. Eng N* 72:1099-1102 D 3 '14

Railroad building under and over the streets of New York. *Il map Sci Am* 113:96-7 Jl 31 '15

See also Bridges; Foundations and piers; Compressed air; Foundations

#### Calamine

Why not call things by their right names? *A. H. Purdue. Eng & Min J* 100:65-6 S 6 '15

See also Zinc ores

#### Calcium carbide

Calcium carbide from carbide fines, a patent of Herman A. L. Hartsbaum. *Met & Chem Eng* 13:762 O 15 '15

Description of patent. *Met & Chem Eng* 13: 612 S 8 15 '15

Preparation of pure calcium carbide. *M. D. Thompson. Met & Chem Eng* 12:779-80 D 11 '14

#### Calcium carbonate

Solubility product constant of calcium and magnesium carbonates. *J. Johnston. Am Chem Soc J* 37:2901-29 S 15

#### Calcium chloride

Comparison of the relative drying power of sulfuric acid, calcium chloride and aluminum trioxide when used in ordinary Schöbler desiccating jars. *J. W. Marden and A. E. Bott. J Ind & Eng Chem* 7:829-1 Ap '15

#### Calcium nitrate

Conductivity study of the reaction between calcium nitrate and dihydrogen phosphate in dilute solution. *W. A. Withers and A. L. Kell. Am Chem Soc J* 37:1091-1105 My '15

Solubility curves of salt hydrate: calcium nitrate. *H. S. Taylor and W. S. Henderson. Am Chem Soc J* 37:1688-94 Jl '15

#### Calcium silicate

Comparison of silicates and carbonates as sources of lime and magnesia for plants. *W. H. MacIntire and L. G. White. Il J Ind & Eng Chem* 6:1093-8 D 14

#### Calcium sulphate. See Anhydrite

#### Calculating machines

Arithmetic machines. *Il: E. Goldberg. Il diags W Soc E J* 19:559-60 N 11; *Same. Sci Am* 8 79:56-60, 76-6 Ja 23-30 '15

Computing machine for areas of irregular tracts. *G. D. Norton. Eng N* 73:394 R 25 '15

Computing machines in engineering. *P. H. Skinner. Il Eng N* 73:25-7 Ja 7 '15

Electric calculating machine for engineer and contractor. *Il Munic Eng* 48:74-5 Ja '15

Fraction calculator. *F. Szabo. diags Mach* 21: 670-1 Ap '15

Handy flywheel calculator. *Il Power* 42:683 N 16 '15

**Calculating machines—Continued**

Machine accounting in a pump works; Hollerith tabulating system. S. G. Koon. *Iron Age* 96:408-11 Ag 19 '15

Multiplying large numbers on adding machines. R. C. Hardman. *Eng N* 74:703 O 7 '15

Pocket calculator. *Il Power* 40:873-4 D 23 '14  
Reducing square feet to decimals of acres. *Eng N* 74:363 Ag 19 '15

Ross precision computer giving results accurate to five places. *Il Eng & Contr* 44:298 O 13 '15; *Elec W* 66:604 S 11 '15; *Colliery* 36:166-7 O '15; *Eng Rec* 72:466 O 9 '15

Wage premium calculator. *Il Iron Age* 96:757 S 30 '15

See also Slide rule

**Calendars**

Four-thousand-year calendar. *Sci Am S* 78:400 D 19 '14

Perpetual calendar. W. J. Spillman; S. F. Kennedy. *Il Sci Am S* 79:141 F 27 '15

**Calgary, Alberta****Electricity supply**

Cost of combination electric service. *Elec W* 66:1181-3 My 8 '15

**Rapid transit**

Calgary's municipal street railway. W. E. Hardenburg. *Il Munie J* 39:395-7 S 9 '15

**Calibration**

Calibration charts for Vanderbilt tenders. T. Pelee. *By Age* (Mech ed) 89:563-5 N '15

Calibration curve for horizontal cylindrical tanks. *Met & Chem Eng* 13:511 Ag '15

Calibration of current transformers by means of mutual inductance. C. Porteseue. *Il diag* Am Inst 14 19 Pro 34:1199-1215 Jo '15

**California****Architecture**

Country home architecture on the Pacific coast. L. C. Mulgardt. *Il plans Arch Rec* 38:423-51 O '15

**Description and travel**

California tree novelties. E. A. Sterling. *Il Am For* 21:768-78, 853-60 Ji-Ag '15

Motor travel in desert country of southern California. L. H. Eddy. *Il Eng & Min J* 100:835-7 N 20 '15

Skii travel in California. W. H. Wright. *Il Eng & Min J* 99:521-2 Mr 20 '15

**Flood control**

\$16,000,000 required for Los Angeles county flood protection. *Il diag* map *Eng Rec* 72:204-6, 232-3 Ag 14-21 '15

**Industries and resources**

California oil in 1914. M. L. Requa. *Eng & Min J* 99:139-40 Ja 16 '15

Pacific coast iron situation; the iron ores of California and possibilities of smelting. C. C. Jones. map *Am Inst Min* 19 Bul 106:1587-93 S '15; Discussion. 108:2430-601 D '15

Topping plants of California. A. E. L. Bell. *Il diag* Am Inst Min 19 Bul 106:1769-99 S '15

**California (battleship)**

Keel of first electrically propelled battleship laid. *Elec W* 66:844 O 16 '15

United States battleship California and class. *Sci Am* 113:63 Ji 17 '15

**California association of electrical contractors and dealers**

By-laws. *Elec R & W Elec'n* 67:841-3 N 6 '15

**California state association of master plumbers**

14th annual convention, San Francisco, July 1-3. *Dom Eng* 72:146-9 Ji 31 '15

**Calipers**

Convenient form of plate caliper. *Locomotive* 30:169-70 Ap '15

See also Micrometers

**Callow pneumatic process. See Motion process****Calorimeters and calorimetry**

Acid-resisting alloy to replace platinum in the construction of a bomb calorimeter. H. W. Parr. *Il Am Chem Soc J* 37:2616-23 N '15

Aneroid calorimeter. H. C. Dickinson and N. S. Osborne. *Il diag* U S Bur Stand Bul 12:23-48 O 28 '15; Abstract. *Am Soc M* 19 J 37:294 My '15; Summary. *J Fr Inst* 179:492-3 Ap '15

Aneroid calorimeter and specific heat of ice. *Iron Tr* 15:57:225 Ji 29 '15

Apparatus for the study of heat radiation. J. D. Hoffman. *Il Heat & Vent* 12:28-30 O '15

Combustion calorimetry and the heats of combustion of cane sugar, benzoic acid, and naphthalene. H. C. Dickinson. *ibid* U S Bur Stand Bul 11:189-267 Mr 1 '15

Diagram for throttling calorimeter. *Il S. Hayward*. *Lower* 42:618 N 2 '15

Difficulty of measuring heat, with special reference to radiated and convected heat. A. H. Barker and F. C. S. Brendal. *Heat & Vent* 12:21-4 My; 33-4 Jo '15

Easy calorimetric methods of high precision. W. P. White. *diag* Am Chem Soc J 36:2313-33 N '14

Effect of high ignition-voltages on the accuracy of bomb calorimeter determinations. R. J. Dittus. *diag Met & Chem Eng* 13:480-1 Ag '15

Gas testing ordinances: coming of calorimetry. J. Abady. *Il Am Gas Light J* 101:369-71 D 14 '14

Heats of combustion of aromatic hydrocarbons and hexamethylene. T. W. Richards and F. Barry. *Il Am Chem Soc J* 37:993-1020 My '15

How radiant heat from gas radiators is determined. *plan Heat & Vent* 12:24-6 My '15

Potentiometers for thermoelectric measurements especially in calorimetry. W. P. White. *diag* Am Chem Soc J 36:1868-85 S '14

Standardization of bomb calorimeters. *U S Bur Stand Circ* 11:1-17 '15

Synthermal regulator, a device for automatically maintaining an adiabatic condition in calorimetry. T. W. Richards and G. D. Os-good. *diag Am Chem Soc J* 37:1718-20 Ji '15

Testing fuel with the Emerson calorimeter. *diag Eng M* 49:sup 2-3 S '15

Tests of a new recording calorimeter. C. H. Stone and W. H. Thimman. *Am Gas Inst Pro* 9:pt 1, 200-10 '11; Same. *Am Gas Light J* 101:387-90 D 21 '14; Discussion. *Am Gas Inst Pro* 9:pt 1, 210-17 '14

Thermoelement installations, especially for calorimetry. W. P. White. *diag* Am Chem Soc J 36:1866-68 S '14

Thermoelements of precision, especially for calorimetry. W. P. White. *Il Am Chem Soc J* 36:2292-313 N '14

Three methods of measuring radiant heat from gas fires. W. E. Twigg. *Il diag Heat & Vent* 12:33-6 S '15

Vacuum jacketed calorimeters, with especial reference to the degree of thermal insulation secured by the use of a vacuum jacket. *U S Bur Stand Bul* 11:319-29 Mr 1 '15

See also Cooling; Specific heat

**Calorizing**

Aluminum alloys as surface protection for metals subject to high temperatures. *Eng N* 72:1123 D 3 '14

Calorizing: a protective treatment for metal. H. B. C. Allison and L. A. Hawkins. *Il Gen Elec* 11:17:597-61 O '14; Same. *Sci Am S* 78:341-2 N 28 '14; Same cond. *Am Gas Light J* 101:309-10 N 16 '14; Same cond. *Eng M* 48:265-7 N '14; Same cond. *Met & Chem Eng* 13:730 N '14; Same cond. *Iron Age* 94:1386-7 D 17 '14; Same cond. *Metal Work* 82:813-1 D 25 '14

Calorizing metals. W. M. Ruder. *Met & Chem Eng* 13:325 My '15

**Calvert, Texas****Water supply**

Sewage-treatment plant at Calvert. T. L. Fountain. *Il diag* plan *Eng N* 73:930-4 My 13 '15

**Calycanthus**

Volatile oil of calycanthus floridus. E. H. Miller, G. W. Taylor, and M. H. Isakow. *Am Chem Soc J* 36:2182-7 O '14

**Cambria steel company**

Report for year ended December 31, 1914. *Iron Age* 95:366-7 S 11 '15

- Cambridge university press**  
Electricity in the publishing business. *Il Elec R & W Elec'n* 65:1089-73 D 5 '14
- Camden, New Jersey**  
**Streets**  
Camden's municipal asphalt plant. *Il Munio J* 38:127-9 F 4 '15
- Cameragraph**  
Machine reproduces, develops and prints all in itself. *Il Eng Rec* 72:32 J1 3 '15  
Photographing on both sides of a sheet. *Il Iron Age* 95:1122-3 My 20 '15
- Cameras**  
Camera for reading meters. *Il Am Gas Light J* 103:141 Ag 30 '15; *Mach* 22:75-6 S '15  
Convenient color camera. C. M. Clark. *diag J Ind & Eng Chem* 6:1013 D '14  
Photographic maps; methods of producing correct charts with the camera. Kappel. *Il diag Sci Am S* 80:200-1 S 25 '15  
Positive postcard camera. *diag Sci Am S* 78:384 D 12 '14  
*See also* Photography
- Camp buildings.** *See* Construction camps
- Campbell, William Wallace, 1862-**  
President American association for the advancement of science. M. Benjamin. *por Sci Am* 113:98 J1 31 '15
- Camphor**  
Our beginnings in camphor. *Sci Am* 112:71 Ja 16 '15
- Camping**  
Boy scouts and forests. K. W. Woodward. *Il Am For* 21:103-9 F '15
- Camps, Construction.** *See* Construction camps
- Camps, Military**  
Camp engineering—water purification. *Sci Am* 8 79:383 Jo 12 '15  
*See also* Concentration camps
- Cams**  
Cutting barrel cams on the lathe. M. H. Chase. *diag Mach* 22:230-1 N '15  
Improved form of cam for stamp mills. A. B. Pooto. *diag Am Inst Min E Bul* 96:2765-6 D '14; *Summ. Eng & Min J* 98:1046 D 12 '14
- Camshafts**  
Thermal welding of camshafts. A. H. Jones. *Mot & Chem Eng* 13:929 D 1 '15
- Canada**  
Nation in perspective; Canada at the Panama-Pacific exposition. B. I. Hurbut. *Il Sci Am* 8 80:17, 24-5 J1 10 '15  
*See also* Railroads—Canada  
**Description and travel**  
Parks in the Canadian Cordillera. J. A. Allan. *Il Sci Am* 8 80:360-2 D 4 '15  
**Industries and resources**  
Mineral production of Canada. J. McLeish. *Eng & Min J* 99:488-9 Mr 13 '15  
*See also* Mines and mineral resources—Canada; Water power—Canada
- Canadian and international good roads convention**  
2d convention and exhibition, Toronto, Ont., March 22-26. Good Roads n n 9:148-9 Ap 3 '15
- Canadian mining institute**  
17th annual convention, Toronto, March 3-5. *Eng & Min J* 99:490-500 Mr 13 '15
- Canadian Northern railroad**  
Canadian Northern railway completed. *Ity R* 56:148-9 Ja 30 '15  
Canadian Northern Rty. opened to the Pacific coast. *Il map Eng N* 74:1099-9 D 2 '15  
Canadian Northern tunnel and terminal electrification. W. C. Lancaster. *Il diag maps Gen Elec R* 17:1068-76 N '14; *Same, Ry R* 66:710-15 D 12 '14  
Completing the Mount Royal tunnel into Montreal. *Il diag plan Ity Age* 59:857-60 N 5 '15
- Canadian Pacific railroad**  
Annual report for the year ended June 30, 1915. *map Ry Age* 59:877-8, 410-12 Ag 27 '15  
Calculations showing economy of constructing the Rogers Pass tunnel. J. G. Sullivan. *diag Eng & Contr* 44:398-400 N 17 '15
- Comparison of the old and new lines of the Canadian Pacific at Rogers Pass. B. C. J. G. Sullivan. *Ity Age* 58:194-5 Ja 20 '15  
Driving a five-mile tunnel through the Selkirk. *Il diag map Ity Age* 57:1082-4 D 11 '14  
Piercing the Selkirk mountains for a five-mile tunnel. *Il map Eng Rec* 70:804-6 D 5 '14; *Same cond. Eng M* 48:760-2 F '15
- Canadian society of civil engineers**  
20th annual meeting, Montreal, Jan. 26 to 28, 1915. *Eng N* 73:235 F 4 '15
- Canals**  
Circumventing Niagara falls. B. Furrows. *Il map Sci Am* 8 78:387-8 D 19 '14  
Connecting Lulu with the sea; completion of the Cello canal along the Columbia river. E. W. Vincent. *Il Sci Am* 112:476 My 23 '15  
Construction of the Welland ship canal. W. A. Cruick. *Il plan Int Marine Eng* 20:151-6 Ap '15  
Driving the tunnel for the Marselles-Rhone canal. R. E. Wagner. *diag Eng N* 71:803-4 O 21 '15  
Largest tunnel in the world. E. L. Corthell. *diag map Eng N* 74:386-7 Ap 26 '15; *Abstract Eng & Min J* 100:800 N 13 '15  
Old wall used as coffer-dam falls at Louisville. *Il Eng N* 74:764-5 O 14 '15  
Preliminary estimating of canal excavation. L. M. Hammond. *Eng Rec* 71:46-7 Ja 30 '15  
Proposed Lake Erie and Ohio river canal; with discussion. G. F. Sweeney. *map Eng Rec W Pa* 31:285-33 My '15  
Rove tunnel on the canal from Marselles to the Rhone. Bourgougnon. *diag Eng & Contr* 43:536-7 Jo 16 '15  
Seventy years of civil engineering. *Il Sci Am* 112:629 Jo 5 '15  
Ship canal for New Orleans, La. *map Eng & Contr* 41:sup23-4 Ag 18 '15  
*See also* Aqueducts; Irrigation canals; Waterways; also names of canals, e.g. New York state barge canal, Panama canal
- Locks**  
*See* Locks (canals and rivers)
- Cancer**  
Danger of delay in cancer. *Sci Am* 112:424 My '15  
Radium treatment of cancer. *Sci Am* 8 79:409 Jo 26 '15  
What everyone should know about cancer. J. C. Bloodgood. *Sci Am* 8 79:231 Ap 10 '15
- Canneries**  
Disposal of cannery wastes. D. Emdin. *Munio J* 38:68-9 Ja 21 '15
- Canning and preserving**  
Canned-goods trade in the Far East. J. A. Shriver. *Il S Bur For & Com Com* 92:1-78 '15  
Canned-tomato industry in Italy. J. A. Shriver. *Il S Bur For & Com Com* 93:1 23 '15  
Contributions of the chemical to the preserved foods industry. R. L. Bentley. *J Ind & Eng Chem* 7:297-9 Ap '15  
Effect of the mineral content of water on canned foods. H. L. Huesink and E. Burrow. *J Ind & Eng Chem* 7:495-6 Jo '15  
Methods followed in the commercial canning of foods. A. W. Hitting. 3 pls *Il S Agric Bul* 196:1-79 '15  
Pineapple-canning industry of the world. J. A. Shriver. *Il S Bur For & Com Com* 91:1-45 '15  
Utilizing wastes in canning pineapples. *Sci Am* 8 79:281 Jo 5 '15  
*See also* Canned; Food preservation
- Cannon ball tree**  
Cannon ball tree of tropical America. *Il Sci Am* 8 79:92 F 6 '15
- Canthlever bridges, Ken Bridges, Canthlever**  
Canvastown for government employees in New South Wales. *Il Sci Am* 112:479 My 22 '15
- Caoutchouc.** *See* Rubber
- Cape Girardeau, Missouri**  
River-front improvement at Cape Girardeau. *Il Eng N* 73:274-5 My 6 '15

**Capillarity**

- Capillary concentration of gas and oil. C. W. Washburne. *Am Inst Min Enl Bul* 93:2365-78 S '14; Discussion. 100:831-46 Ap '15
- Drop weight method for the determination of the surface tension of a liquid. J. L. R. Morgan. *Am Chem Soc J* 37:1461-7 Je '15
- Surface tension due to intermolecular attraction. O. Lehmann. *diags Sci Am* S 80:341 N 27 '15
- Surface tensions of water, methyl, ethyl and isobutyl alcohols, ethyl butyrate, benzene and toluene. T. W. Richards and L. B. Coombs. *il diag Am Chem Soc J* 37:1668-76 J1 '15

*See also* Brownian movements

**Capital**

- Capital and income—capital and revenue. A. J. B. Schmidt. *J Account* 20:283-90 O '15
- Capital as a liability. J. Account 18:417-9 D '14
- Working capital. W. J. Norton. *Am Inst Enl* 99 Pro 34:2140-58 S '15

*See also* Banks and banking; Interest; Investments

**Capitol buildings**

- Heating and ventilating plant for the Missouri state capitol; reversible system of air supply for house and senate chambers. *il diags plans Heat & Ven* 12:13-21 My '15
- Thomas Jefferson and the first monument of the classical revival in America. F. Kimball. *il Am Inst Arch J* 3:370-81, 421-34, 473-91 S-N '15
- Utah state capitol. *il Arch & Bldg* 47:324-30 S '15

**Car. See Cars****Car and locomotive painters' association. See Master car and locomotive painters' association****Car builders' association, Master. See Master car builders' association****Car cleaning**

- Car-cleaning practice. *illec Ry J* 45:516-16 Mr 13 '15
- Plant for sand blasting steel cars. *diags Ry Age* 59:397-8 Ag 27 '15; Same. *Ry Age (Mech ed)* 89:427-8 Ag '15
- Use of the vacuum system for cleaning cars in San Francisco. E. W. Allen. *il illec Ry J* 45:516-17 S 18 '15
- Vacuum cleaning cars. E. J. Haines. *il illec Ry J* 46:323 Ag 21 '15

**Car couplings**

- Automatic freight truck coupler. *il Ry Age* 59:407-8 S 10 '15
- Emergency coupler head. *diag Ry Age (Mech ed)* 89:484-5 S '15
- Handling coupler yokes. *il Ry Age (Mech ed)* 89:592 N '15
- Master car builders' association committee report. *Ry J* 56:837-8 Ja 19 '15
- Omaha coupler with air and electrical connections for trailer service. T. G. Wood. *il diags illec Ry J* 44:1267 D 5 '14
- Proposed M. C. B. standard coupler. *Ry J* 55:766-6; 56:59-60, 121, 186-7 D 26 '14, Ja 9, 23, 16 6 '15

**Car distributor. See Railroads—Management****Car dumping machines. See Dumping appliances****Car fenders**

- Novelty in fenders. *il diags illec Ry J* 45:723-4 Ap 10 '15

**Car ferries**

- Car ferry of the Florida West Coast railway. *il plan Ry Age* 58:188 Ja 29 '15
- Car-transfer ferry on the Ohio. C. L. & C. R. R. *diags plans Eng N* 74:599-600 S 23 '15
- Ice-breaking train ferry steamer. *il diag plan (supp) Engineer* 120:49-50 J1 '15; Abstract. *Int Marine Eng* 20:515 N '15
- Large motor-driven railway train ferry for service in San Francisco Bay. C. J. Holden. *il plans Int Marine Eng* 20:302-4 J1 '15
- New car ferry with adjustable deck from Moncton, N. B. across the St. Lawrence river. *il diag Ry Age* 58:365-6 F 26 '15
- Portable stop for a car-ferry incline. *diag Eng N* 74:221 J1 29 '15
- Roads allowed to retain car ferries. *Ry R* 50:721-3 My 29 '15

- Side-wheel car ferry Contra Costa. E. W. Olin. *il diags Int Marine Eng* 20:385-94 S '15
- To Cuba by rail. H. C. Plummer. *il map Sci Am S* 79:40-1 Ja 16 '15
- Train ferries, Swedish state railways. *il diag plan Ry J* 57:299-301 S 4 '15

**Car heating**

- Electric heating and electric heater control. W. S. Hammond, Jr. *il diags Am Soc Heat & V E* 20:279-93 '14
- Light-weight all-steel panel heater. *il diag illec Ry J* 46:773 O 9 '15
- Study of car-heating requirements. *illec Ry J* 45:103-4 Ja 9 '15

**Car houses**

- Car maintenance on the San Francisco-Oakland terminal railways. G. St. Pierre. *il diags illec Ry J* 46:527-30 S 18 '15
- Carhouse for a residential district. *il diag plan illec Ry J* 45:600-3 Ap 3 '15
- Carhouse of Seattle municipal railway. H. J. Kennedy. *il illec Ry J* 45:513-14 Mr 13 '15
- Design, construction and detailed costs of a car storage house in Council Bluffs, Iowa. W. L. Fulton. *plans Eng & Contr* 44:31-5 J1 14 '15
- Enlarging the Geary street municipal carhouses at San Francisco. *diags illec Ry J* 45:567-8 Ap 3 '15
- Fireproof carhouse at Vancouver. B. C. *il plan illec Ry J* 45:237-8 Ja 30 '15
- New carhouse and shops at Holyoke. *il plan illec Ry J* 45:930-1 My 15 '15

*See also* Car inspection

**Car inspection**

- Car service inspection in Seattle. J. W. McCloy. *illec Ry J* 46:272-3 Ag 14 '15
- Chief interchange car inspectors' and car foremen's association, 17th annual convention. *Ry Age (Mech ed)* 89:522-5 O '15
- Inspection and repairs of freight cars by piecework. J. J. Tolin. *Ry Age (Mech ed)* 89:467-8 S '15
- Making of good car inspectors. A. M. Orr; "16. C." *Ry Age (Mech ed)* 89:575-8 N '15
- Uniformity in car inspection. M. Maren. *Ry Age (Mech ed)* 89:468 S '15

**Car lighting**

- Analysis of requirements for modern street car lighting. L. C. Poma. *il diags Illum Eng Soc* 10:82-100 no 1 '15
- Better car illumination effects other economies. *illec Ry J* 44:1308-9 D 12 '14
- Car electric lighting systems. E. S. McNab. *Ry Age (Mech ed)* 89:467-8 S '15
- Car lighting generator with underframe suspension. *il diags Ry Age* 59:208 J1 30 '15; *Eng N* 73:1084 Ja 3 '15
- Electric lighting of railway passenger cars. E. S. McNab. *Ry J* 57:696-9 N 27 '15
- Illumination of cars. *illec V* 65:720-30 Mr 20 '15
- Improved head-end axle generating system for train lighting. *il illec It & W Elec'n* 67:490-1 S 11 '15
- Improved lighting for Westchester cars. *il illec Ry J* 46:218-19 O 30 '15
- New York municipal car the lighting. W. C. Gove. *il illec Ry J* 45:614-18 Mr 27 '15
- Practical study of car lighting problems; with discussion. W. C. Gove and L. C. Porter. *bibliog il plans Illum Eng Soc* 10:227-52 no 3 '15
- Recent improvements in the electric lighting of steam railroad cars. E. C. Laupher. *il diags Am Inst Enl* 99 Pro 31:823-46 Ag '15
- Regulator for car-lighting circuits. *il diags illec Ry J* 45:851-2 My 1 '15
- Underframe axle lighting equipment. *il diags Ry J* 56:568-70 Ap 24 '15; *Ry Age (Mech ed)* 89:267-8 My '15

**Car load. See Freight car service—Car load****Car painting**

- Master car and locomotive painters' 46th convention. *Ry Age* 59:506-8 S 24 '15
- Master painters' 46th annual meeting. *Ry Age (Mech ed)* 89:539-42 O '15
- Painting cars in two days. P. V. See. *il diag illec Ry J* 45:584-6 Mr 20 '15
- Painting locomotives and steel cars. M. L. Hims. *Ry Age (Mech ed)* 88:641-2 D '14; Abstract. *Am Soc M E J* 27:120-1 F '15



**Car painting—Continued**

Painting steel car doors. *diag* Ry Age (Mech ed) 88:643-4 D '14

Relation of the paint shop to the repair yard. W. Buchanan. *Ity Age* (Mech ed) 89:28-9 Ja '15

Steel car design from a protection standpoint. J. D. Wright. *Ry Age* (Mech ed) 89:525-6 O '15

**Car pooling. See Freight car service****Car pullers**

Car-pullers for switching at industrial plants. *Eng N* 74:299 Ag 12 '15

**Car resistance. See Train resistance****Car roofs**

Passenger car roof construction. *diag* Ry Age 59:332 Ag 20 '15; Same. *Ry Age* (Mech ed) 89:486-6 S '15

Testing car roofs for leakage. *diag* *Ity Age* (Mech ed) 88:374; 89:299 J1 '14, Ag '15; *Ry R* 56:787-8 Je 12 '15; *Sci Am* 113:276 S 25 '15

**Car sanitation. See Car cleaning; Car ventilation; Cars—Disinfection****Car shops. See Railroads—Shops****Car signs**

Route signs for surface cars. *It* *Elec Ry J* 46:260-2 Ag 14 '15

**Car spotting charges. See Railroads, Industrial****Car trucks**

Experiments to determine the forces imposed on a truck side frame and the stresses produced. L. B. Bondley. *It* *diag* *Ity R* 56:360-3, 491-7 Ap 3-10 '15; Same cond. *Ity Age* (Mech ed) 89:127-9 Mr '15

Foraylie forged truck side frame. *It* *Ry R* 57:187 Ag 7 '15

Four wheel trucks for passenger cars. R. V. Wright. *diag* *Ity Age* (Mech ed) 89:569-74 N '15

Master car builders' association committee report. *Ity R* 56:241-2 Je 19 '15

Narrow-gauge cars for the Burma mines. Ry. F. C. Coleman. *It* *plans* *Ry R* 57:173-5 Ag 7 '15

Roller steel truck frames. *It* *Ity Age* 59:331 Ag 20 '15

Truck designed for low maintenance costs. *It* *Elec Ry J* 45:1126 Je 12 '15

*See also* Draft gears

**Car ventilation**

Improvement in sanitation of cars; with discussion. D. L. Cooke. *It* *diag* *Am Soc Heat & V* 10 20:253-78 '14

Tests of exhaust ventilators on passenger trains. G. L. Fowler. *Ity Age* 58:1069-12 My 14 '15; Same. *Ity Age* (Mech ed) 89:236-8 My '15

Ventilation of sleeping cars. T. R. Crowder. *Ity Age* (Mech ed) 89:464-6 S '15

**Car wheels**

Accident caused by defective wheels. H. W. Behn. *Ity Age* 59:48 J1 9 '15

Annealing car wheels. W. J. Keop. *Foundry* 43:187-8 My '15

Association of manufacturers of chilled iron wheels; presidential address. G. W. Lyndon. *Ity R* 57:505-6 O 16 '15; Same cond. *Ity Age* 59:690 O 15 '15; Same cond. *Ry Age* (Mech ed) 89:578 N '15; *Excerpta*. *Elec Ry J* 46:918 O 30 '15

Boring machine for car wheels. *It* *Iron Tr R* 55:1180 D 24 '14

Built-up car wheels declared inadequate. *diag* *Eng N* 74:11 J1 1 '15

Car-wheel grinding machine. *It* *Iron Age* 94:1485 D 31 '14

Cause of thick and thin wheel flanges. J. P. Barnes. *Elec Ry J* 46:189-90 J1 31 '15

Chicago elevated shop practice. *It* *Elec Ry J* 46:561-2 Mr 20 '15

Chill and shrinkage of cast iron. R. A. Pitman. *Foundry* 43:304 Ag '15

Chilled car wheels. W. J. Keop. *Foundry* 43:469 N '15

Control of chill in cast iron, considering the elements effective in the manufacture of malleable castings and chilled car wheels. G. M. Thrasher. *It* *Am Inst Min* 10 Jul 108; 2129-38 O '15; Same. *Foundry* 43:461-3, 4 D '15; Same. *Iron Tr R* 57:1171-3, D 16 '15

Danger of welding processes as applied to tires and wheels. M. D. Hayes. *It* *Elec Ry J* 46:942-4 My 15 '15

Effect of car-wheel diameter on motor heating. *Elec Ry J* 46:70 J1 10 '15

Effect of car-wheel diameter on motor heating. A. L. Broomall. *Elec Ry J* 46:152-3 S 11 '15

Effects of variance in car-wheel diameters on motors. A. S. Langsdorf. *Elec Ry J* 44:1344 D 19 '14

Energy contained in revolving wheels and locomotive side rods. W. E. Symons. *Ry Age* 59:455 S 10 '15

Fuel ratio for car wheel iron. A. S. Dowler. *Foundry* 43:497-8 Mr '15

Fuel ratio on car wheel iron. W. J. Keop. *Foundry* 43:551-2 F '15

Grinding street car wheels under the car. *It* *Mach* 21:462 F '15

Making car wheels at the Lenoir car works. G. S. Evans. *Foundry* 43:351-3, 428-31, 433-9 S-N '15

Old and new methods of making carwheels. G. V. Slocum. *diag* *Iron Age* 96:676-9 S 23 '15

Relation of wheel coning to rails and the plates. W. M. Osborn. *Ry R* 56:357-9 Mr 13 '15

Report on wreck due to broken car wheel. *diag* *Ry R* 56:789-91 Je 12 '15

Restoring steel wheel flanges with a welder. J. A. Murphy. *It* *Elec Ry J* 45:719-20 Ap 10 '15

Shrinkage cracks in car wheels. W. J. Keop. *Foundry* 43:280 J1 '15

Strong claims for chilled iron car wheels. J. K. Vial. *Ity Age* 58:220 Ap 16 '15

Wheel diameter and motor heating. F. J. Foote. *Elec Ry J* 46:211 O 30 '15

Wreck due to a faulty car wheel. *It* *Iron Tr R* 57:337-40 J N 11 '15

*See also* Axles

**Carbide lamps**

Mines' carbide lamps. J. W. Paul. *It* *S Ind Mines* (Dec 18) 10 '15

**Carbohydrates**

Acetolysis of carbohydrates. S. Baer and J. M. Nelson. *Am Chem Soc J* 37:1463-9 J1 '15

**Carbolic acid**

Analysis of coal with phenol as a solvent. S. W. Parr and H. E. Huley. *It* *diag* *map* *It* *Eng Exp Sta Bul* 76:1 J1 '11

Extraction of carbolic acid from oils of the distillation of coal tar. W. Mason. *diag* *Met & Chem Eng* 13:293 4 My '15

Phenol for coal analysis. *Sci Am* 11 79:339 MA 29 '15

Synthetic phenol and picric acid. A. H. Ney. *Met & Chem Eng* 13:656 90 O 1 '15; Same. *Sci Am* 8 80:346-7 N 27 '15

**Carbolium**

Carbolium and crocoite. H. H. Abcock. *Am Gas Light J* 103:88-9, 125 J1 26, Ag 23 '15

Carbolium and crocoite. S. H. Church. *Am Gas Light J* 103:108 Ag 16 '15

**Carbon**

Carbon as a heating element in appliances. G. W. Piper. *Elec W* 66:134-5 J1 17 '15

Effect of carbon on the physical properties of heat-treated carbon steel. J. H. Nond. *It* *Am Inst Min* 10 Jul 108:2341 57 D 1 '15

Free energy of some carbon compounds. G. N. Lewis and M. Randall. *Am Chem Soc J* 37:458-70 Mr '15

Liquefaction of carbon and the temperature and conditions of the electric arc. *Met Am* 8 80:319 N 13 '15

Molecular weight of sodium carbonate and the atomic weight of carbon referred to silver and bromine. T. W. Richards and C. R. Hoover. *Am Chem Soc J* 37:195-197 Ja '15

Thermoelectric properties of carbon. W. C. Moore. *Am Chem Soc J* 37:2637-7 S 8 '15

*See also* Chemistry. Organic; Coal; Coke; Electric light carbons

**Carbon bisulphide**

Removal of carbon bisulphide from coal-gas. K. V. Evans. *diag* *Met & Chem Eng* 13:239-40 Ap '15

**Carbon brushes. See Brushes (electric machinery)**

**Carbon dioxide**

Calculating dry flue-gas loss. C. W. Hubbard. Power 42:746-8 N 30 '15  
 Determination of carbon dioxide in baking powder and carbonates. H. W. Brubaker. diag J Ind & Eng Chem 7:432-3 My '15  
 How much CO<sub>2</sub> to expect with various kinds of fuel. V. J. Azbe. Power 42:712-14 N 23 '15

**Carbon dioxide recorders**

Hays CO<sub>2</sub> and draft recorder. II Eng M 49:sup 6-8 S '15  
 Parker CO<sub>2</sub> machine. II diag Power 42:297-9 Ag 31 '15  
 Recording power plant operations. J. C. Smallwood. II diag Eng M 50:33-46 O '15  
 U-tube carbon dioxide indicator. W. A. Cunningham. II diag Iron Age 96:870-2 O 14 '15

**Carbonia finish.** II Am Gas Light J 103:81 Ag 9 '15

**Carbonization of coal**

Carbonization in bulk—Koppers' ovens. C. J. Hamsburg. II diag Am Gas Inst Pro 9:pt 1, 543-601; Discussion. 601-14 '14  
 Mode of decomposition of coal by heat. H. C. Porter and G. B. Taylor. diag Am Gas Inst Pro 9:pt 1, 234-83; Discussion. 9:pt 1, 283-8 '14  
 Report of the committee on progress in carbonization methods. II diag Am Gas Inst Pro 9:pt 1, 450-539; Discussion. 9:pt 1, 539-43 '14

**Carbons, Electric light.** See Electric light carbons

**Carborundum**

Carborundum and cork exhibits at the Panama-Pacific International exposition. II Met & Chem Eng 13:458-9 J1 '15  
 Silicon, coke, sawdust and soil. C. E. Williams. Iron Tr R 56:457-8 Mr 4 '15  
 See also Silundum

**Carbureters**

Angular venturi in Edwards. diag Automobile 33:240 N 18 '15  
 Automatic carburetor for explosion motors. A. Krebs. diag Horseless Age 35:474-5 Ap 7 '15  
 Balanced valve on new Stromberg. II diag Automobile 31:1175 D 24 '14  
 Brad-Kent carburetor. II Horseless Age 35:539 Ap 21 '15  
 Car and carburetor design suitable for driving with any fuel. diag Automobile 33:288-91-1 Ag 12 '15  
 Carburetor and oiling of Stevens-Duryea. diag Automobile 32:276 F 11 '15  
 Carburetion trouble. I. N. McClinton. diag Power 41:275 F 23 '15  
 Carburetors and their work. R. C. Collins. II Horseless Age 36:19 J1 7 '15  
 Chaudet carburetor. diag Horseless Age 35:851 Je 23 '15  
 Controlling the mixture without moving parts. diag Horseless Age 35:711-12 My 26 '15  
 Decolton rendered in carburetor suit. Automobile 32:296 F 11 '15  
 Duplex carburetor for lights. II diag Automobile 32:199 Ja 28 '15  
 Extended venturi in new Schobler. diag Automobile 32:541 Mr 25 '15  
 Features of Browne carburetor. Horseless Age 34:923 D 23 '14  
 Franklin cylinder oil carburetor. II Power 41:674 My 18 '15  
 Gas and air in carburetors. Automobile 32:371 F 25 '15  
 Great variety in carburetors. II diag Automobile 32:238-49 F 4 '15  
 Influence of the carburetor nozzle on the mixture proportion in liquid fuel motors. K. Rummel. diag Horseless Age 35:508-11, 552-5, 584-7, 618-20, 680-2 Ap 14-May 5, 19 '15  
 Limit gauge for distance between an inside and an outside surface. diag Mach 21:493 F 15 '15  
 Languanore carburetor now made in America. diag Automobile 33:386 Ag 28 '15  
 Master carburetor. diag Horseless Age 35:571 Ap 28 '15  
 New-Speed carburetor. diag Automobile 33:754 O 21 '15  
 New Stromberg type II carburetor. diag Horseless Age 34:879 I 16 '14  
 Notes on carburetion. M. T. Putnam. Horseless Age 35:347-50 Mr 10 '15

Vacuum carburetor system. diag Horseless Age 35:207 F 10 '15

Vacuum-velocity ratio not constant. A. B. Browne. II Automobile 31:1066-7 D 10 '14  
 See also Automobile engines; Automobiles—Feeding systems; Gas and oil engines

**Carburization.** See Case hardening

**Card clothing**

Improved construction invented in Switzerland. diag Textile World 50:180-90 N '15

**Card system in business**

Card index and what it means. J. J. Reynolds. Elec Ry J 46:815-18 O 16 '15  
 Card index increases efficiency of new-business department. Elec R & W Elec'n 66:899-900 My 15 '15

**Card records in selling accessories.** Horseless Age 35:229-30 F 17 '15

Follow-up card index of new buildings. Elec W 66:206 J1 24 '15

Where's that pattern? and how to locate it. H. A. Russell. II Foundry 43:263-5 J1 '15

See also Accounting; Files and filing (documents); Records

**Cardboard**

Where waste newspapers go. Sci Am 111:471 D 5 '14

**Carding machinery**

Stripping mechanism for cards. diag Textile World 50:73 O '15

**Carhouses.** See Car houses

**Caricatures and cartoons**

Truman Curtis, cartoonist. II. Hurley. II Inland Pr 56:24-6 O '15

**Carlisle, Pennsylvania****Streets**

Vitrified-brick pavement on an old macadam base. J. C. Hiltshaw. II diag Eng N 72:1262-3 D 24 '14

**Carnotite**

Concentration of carnotite ores. Met & Chem Eng 13:273 My '15

Extraction and separation of the radioactive constituents of carnotite. H. M. Thum. Am Chem Soc J 37:1797-1816 Ag '15

Method of treating carnotite ores. Eng & Min J 90:864 My 15 '15

Radium-uranium ratio in carnotites. S. C. Lind and C. E. Whittemore. diag Am Chem Soc J 36:2006-82 O '14

Radium-uranium ratio in carnotites. S. C. Lind and C. E. Whittemore. II diag U S Bur Mines Tech Pa 88:1-28 '15

**Carroll, Cincinnati & Ohio railway**

Kirkhorn extension of the Carroll, Cincinnati & Ohio Ry. II Ry R 56:239-42 F 20 '15

**Carpenter shops**

Details of a standard portable carpenter shop on construction work. II plans Concrete Cem 6:186 Ap '15

Planning a small carpenter shop. W. S. Wilkin. II plan Bldg Age 37:35-7 O '15

**Carpentry**

See also Building; Cabinet making; Cars; Doors; Floors; Lathes; Railings; Roofs; Scaffolding; Slide rule; Woodworking machinery

**Study and teaching**

Training carpenters for the trade at Bridgeport. J. E. Johnson. II Am Ind 15:26-8 Mr '15

**Carriers**

See also Commerce; Demurrage; Express companies; Freight; Interstate commerce; Railroads; Shipping; Steamboat lines

**Cars**

Day State combination car. II diag Elec Ry J 46:854-7, 1068-73 O 23, N 27 '15

Brake shaft drop handle and ratchet. diag Ry Age (Mech ed) 80:43 Ja '15

Buffalo, Rochester & Pittsburgh standard outfit cars. II plans Ry Age 58:145-7 Je 18 '15

Car control. J. Fitzmorris. Ry Age (Mech ed) 80:71-2 F '15

Car design from a service standpoint. II diag Elec Ry J 46:578-80 S 18 '15

Cars and locomotives ordered and built in 1914. Ry Age 58:15-20 Ja 1 '15

**Cars—Continued**

Cars and locomotives ordered in 1914. *Ity R* 56:36-41 Ja 2 '15  
 Cars at less than cost. N. W. Storer. *Elec Ity J* 46:635 S 25 '15  
 Combination car for Kansas interurban line. *I* *Elec Ity J* 46:806 Ap 24 '15  
 Commissary car, Canadian Pacific railway. *I* plan *Ity R* 56:707-8 D 13 '14  
 Curtain fixtures without pinch handles. *I* *Elec Ity J* 46:298-9 F 6 '15  
 Extensible trap door for passenger cars. *I* plan *Elec Ity J* 46:116-17 J 17 '15; *Ity Ago* 59:207-8 J 1 30 '16; *Ity Ago* (Mech ed) 89:430-1 Ag '16; *Ity R* 57:268-9 Ag 28 '15  
 Fireproofing wood for passenger car construction on British railways. *Ity R* 57:889 N 27 '15  
 Improvements in Des Moines interurban cars. *I* *Elec Ity J* 46:156-7 J 1 24 '15  
 Making interurban cars comfortable. *diag* *Elec Ity J* 46:834 O 16 '15  
 Master car builders' 49th annual convention. *Elec Ity J* 46:1163-4 Ja 19 '15  
 Master car builders' 49th annual convention. *Ity R* 56:833-42 Ja 19 '15  
 New passenger car equipment Union Pacific R. R. *I* plans *Ity R* 56:195-6 F 6 '15  
 Relative merits of long and short wheel base scale-testing cars. C. A. Briggs. *I* *diag* *Ity R* 57:197-201 Ag 14 '15  
 Remodeled mail cars for housing government field parties. *I* plan *Ity Ago* 57:1149 D 18 '14  
 Salt Lake & Utah railroad. *I* map *Elec Ity J* 46:54-5 Ja 2 '15  
 Semi-steel cars in collision. C. G. Keen. *I* *diag* *Elec Ity J* 46:715-16 Ap 10 '15  
 Steel frame double truck caboose. *I* *diag* plan *Ity Ago* (Mech ed) 89:301-4 Ja '15  
 Steel frame passenger equipment with wood finish; new Grand Trunk suburban cars. *I* *diag* *Ity Ago* 58:753-5 Ap 2 '15; *Same*. *Ity Ago* (Mech ed) 89:174-8 Ap '15  
 To find maximum overhang of car on curve at platform. L. C. Jordan. *diag* *Rec* 71:340 Mr 13 '15  
 U. S. Bureau of standards test weight car no. 2. *I* *Ity R* 57:483-4 O 16 '15  
 Upkeep of railway carriages. *Engineer* 120:171-3 Ag 20 '15  
 Use of current for operating crane to remove trucks from under car bodies. R. E. Hewitt. *I* *Elec Ity J* 46:638 S 25 '15  
 Veneered steel for interior finish of passenger cars, Canadian Pacific R. R. *I* *Ity R* 56:724 D 13 '14; *Same*. *Ity Ago* 57:1087-8 D 11 '14  
*See also* Air brakes; Automobiles; Baggage and express cars; Bath cars; Brake beams; Brake shafts; Buffet cars; Car cleaning; Car couplings; Car heating; Car houses; Car lighting; Car painting; Car roofs; Car trucks; Car wheels; Chapel cars; Draft gears; Dynamometer cars; Electric railroads—stalling stock; Freight car service; Freight cars; Hospital cars; Motor cars (railroad); Refrigerator cars; Sleeping cars; Street cars; Tank cars

**Bearings**

Ball bearings on electric railway cars; abstract. R. Zehnder-Spoerry. *diag* *Am Soc M E J* 37:230-1 Ap '15  
 Economics of the light car and of ball bearings. A. V. Farr. *Elec Ity J* 46:230-40 Ag 7 '15  
 Lubrication of car journals. W. A. Clark. *Ity Ago* (Mech ed) 89:19-20 Ja '15  
 Need of standard railroad car-bearing alloy. R. L. Clarke. *Foundry* 43:467-8 N '15  
 Street railway service being inaugurated in Miami, Fla., with storage-battery cars. *I* *diag* *Elec Ity J* 46:920-1 O 30 '15  
 Use of ball bearings on Swedish railways. *diag* *Ity R* 56:600 My 1 '15

**Cleaning**

*See* Car cleaning

**Disinfection**

Disinfectant arrangement for passenger cars. *diag* *Ity Ago* (Mech ed) 89:466-7 S '15

**Painting**

*See* Car painting

**Repair**

Car maintenance on a definite cost basis. K. C. Schluss. *Elec Ity J* 46:568-9 S 18 '15  
 Car maintenance on the San Francisco-Oakland terminal railways. G. St. Pierre. *I* *diag* *Elec Ity J* 46:527-30 S 18 '15  
 Compensation for car repairs; Master car builders' association committee report. *Ity R* 56:835-6 Ja 19 '15  
 Maintenance of 1600-volt d. c. cars by the Southern Pacific company. E. Sears. *I* *Elec Ity J* 46:551-4 S 18 '15  
 Maintenance of 1200-volt d. c. cars by the Oregon electric railway. D. L. Clough. *I* *Elec Ity J* 46:555-6 S 18 '15  
 Maintenance of 1200-volt d. c. cars by the Southern Pacific company. R. E. Hewitt. *I* *Elec Ity J* 46:546-8 S 18 '15  
*See also* Railroads—Shops

**Ventilation**

*See* Car ventilation

**Cars, Caboose**

Eight-wheel caboose with steel underframe. E. E. Glynn. *I* *diag* *Ity Ago* (Mech ed) 89:231-3 My '15  
 Erie caboose with steel center sills. *I* *diag* plan *Ity Ago* (Mech ed) 89:25-8 Ja '15  
 Steel frame caboose, Buffalo, Rochester & Pittsburgh R. R. *I* *diag* *Ity R* 56:270-2 F 27 '15  
 Steel frame double truck caboose, Buffalo, Rochester & Pittsburgh. *I* *diag* plan *Ity Ago* (Mech ed) 89:301-1 Ja '15

**Cars, Chapel.** *See* Chapel cars

**Cars (derrick)**

Derrick car for elevated-railway reconstruction. J. M. Ryan. *I* *diag* *Eng N* 73:986-7 My 20 '15

Seventy-nine-ton derrick car lowers track 50 feet in twenty-five minutes. A. S. Beale. *I* *Eng Rec* 72:78-9 J 17 '15

**Cars, Dining.** *See* Dining cars

**Cars, Freight.** *See* Freight cars

**Cars, Hospital.** *See* Hospital cars

**Cars (inspection)**

Conducting track inspection on the Grand Trunk. *I* *Ity Ago* 57:1115-7 D 18 '14

**Cars, Kitchen.** *See* Kitchen cars

**Cars (line)**

Pillar crane car for track work. E. M. T. Ryder. *I* *Elec Ity J* 46:763 Ap 17 '15  
 Three-in-one car. E. C. Sherwood. *I* *diag* *Elec Ity J* 46:121-3 Ja 12 '15

**Cars, Military**

New war cars for our army. *I* *Sci Am* 113:38 J 31 '15

**Cars, Refrigerator.** *See* Refrigerator cars

**Cars (section)**

Efficiency of motor cars for section forces. G. R. Morrison. *Ity Ago* 56:227 S 8 '15; *Same*. *Ity R* 57:345-6 S 11 '15

**Cars (spreader)**

Improvements in bank spreader cars. *Ity R* 56:134 Mr 27 '15

**Cars, Steel**

All-steel cars for London & Port Stanley railway. *I* *Elec Ity J* 46:27-8 J 1 3 '15  
 All-steel one-man car. *I* *Elec Ity J* 46:72 3 J 1 '15  
 All-steel passenger cars for the Pacific electric railway. E. E. Small. *I* *diag* *Elec Ity J* 46:488-92 S 18 '15  
 American steel cars built for Russian railways. *I* *Eng N* 74:951 N 11 '15  
 Analysis of stresses in Chicago elevated steel car. H. A. Johnson. *diag* *Elec Ity J* 44:1799-1800 D 12 '14  
 British all-steel kitchen cars. *I* *diag* *Ity Ago* (Mech ed) 89:178-82 Ap '15  
 Center-entrance cars for suburban service. *I* plan *Elec Ity J* 46:282-4 Ag 14 '15  
 Considerations affecting the type of center sills in steel passenger equipment. L. K. Milcox. *diag* *Ity Ago* (Mech ed) 89:227-31 My '15

**Cars, Steel—Continued**

Design and operation of the new shop for building steel freight and passenger cars of the Canadian Pacific Ry., at Montreal. L. C. Ord. *ii* diag plan Eng & Contr 42:406-11 O 28 '14

Design of steel passenger equipment. V. W. Zillen. *diag* Ry Age (Mech ed) 89:459-61, 515-16 S-O '15

Jersey Central steel baggage and mail equipment. *ii* diag Ry Age 58:301-4 F 19 '15; Same. *Ry* Age (Mech ed) 89:123-7 Mr '15

Jersey Central steel passenger cars. *ii* diag plan *Ry* Age (Mech ed) 88:635-9 D '14

Light-weight car for Cleveland & Eastern traction company. *ii* Elec Ry J 46:30-1 J1 3 '15

Light-weight steel interurban car of the Toledo, Fostoria & Findlay railway. *ii* plan Elec Ry J 45:947-8 My 15 '15

Long Island railroad adopts light, steel trailers. *ii* diag Elec Ry J 46:136-8 J1 24 '15

Long Island steel suburban cars. *ii* diag *Ry* Age (Mech ed) 89:103-6 Ag '15; Same. *Ry* Age 59:241-4 Ag 6 '15

New subway and elevated car of the New York municipal railway corporation. *ii* diag *Ry* J 56:208-13 F 13 '15

Northern Pacific passenger cars. *ii* diag *Ry* Age (Mech ed) 89:171-22 (1) '15; Same cond. *Ry* Age 59:733-7 O 22 '15

Plant for sandblasting steel cars. *diag* *Ry* Age 59:397-8 Ag 27 '15; Same. *Ry* Age (Mech ed) 89:427-8 Ag '15

Pressed-steel cars for the Chicago elevated. *ii* diag Elec Ry J 44:1234-9 D 5 '14

Railway safety and railway economies. Sci Am 112:46 Jan 9 '15

Riveting in steel car construction. H. A. Hatfield. *ii* diag *Ry* Age (Mech ed) 89:33-6, 87-90 Jan-F '15

Sand blasting steel cars. *diag* *Ry* Age (Mech ed) 89:376-7 J1 '15; Same cond. *Ry* Age 59:104-5 J1 16 '15

Steel and steel underframe passenger train equipment; statistics of progress and cost. *Ry* J 56:705 My 22 '15; *Ry* Age (Mech ed) 89:299-300 Jo '15

Steel car design from a protection standpoint. J. D. Wright. *Ry* Age (Mech ed) 89:525-6 O '15

Steel cars for Chicago & Milwaukee electric railroad. *ii* diag Elec Ry J 46:388-91 S 4 '15

Steel cars of the arch roof type. *ii* diag plans *Ry* Age (Mech ed) 89:319-54 J1 '15

Steel coaches for the Santa Fe. *ii* diag *Ry* Age (Mech ed) 89:21-6 Ja '15

Steel dynamo-baggage cars for the Union Pacific R. R. *ii* diag *Ry* J 56:460 Ap 3 '15

Steel parlor cars for Waterloo-Cedar Rapids line. *ii* plan Elec Ry J 46:932-4 My 15 '15

Steel passenger equipment for the Union Pacific. *ii* diag *Ry* Age 58:1475-9 Jo 25 '15

Steel suburban cars for the Erie. *ii* diag *Ry* Age (Mech ed) 89:356-8 J1 '15; Elec Ry J 46:1102-5 Jo 12 '15; Eng N 73:1142-4 Jo 10 '15; *Ry* Age 58:1243-5 Jo 11 '15

Stress analysis of the Chicago steel car. W. Kettner and M. C. George. Elec Ry J 45:201-2 F 6 '15

**Painting****New Car painting****Repair**

Steel cars on the Long Island. *ii* Elec Ry J 46:566-70 Mr 20 '15

**Cars, Subway**

Electrical equipment of Belmont tunnel cars. *ii* Elec Ry J 46:764-5 Ap 17 '15

New subway and elevated car of the New York municipal railway corporation. *ii* diag *Ry* J 56:208-13 F 13 '15

**Carson lake**

Unwatering Carson lake. L. D. Davenport. *ii* map Eng & Min J 98:1069-70 D 19 '14

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Annealing of brass cartridge cases. L. J. Krom. *ii* diag Metal Ind n s 13:559-63 S 15

Making cartridge cases. D. T. Hamilton. *ii* diag Mach 21:651-6 Ap '15; *Excerpt. Sci Am* S 80:29-30 J1 10 '15

**Cartridges**

Cartridges for war. E. C. Crossman. *Sci Am* 113:219-4 S 4 '15

*See also* Bullets

**Carty, J. J.**

Portrait. *Power* 42:66 J1 13 '15

**Case hardening**

Carburization and heat-treatment. J. G. Ayers, Jr. *ii* Mach 22:17-23 S '15

Case-hardening process for tool steel. R. A. Millholland. *Metal Work* 84:688-9 N 26 '15; Same. *Iron Age* 96:1168-7 N 18 '15

Case-hardening retorts and furnaces. R. A. Millholland. *ii* *Iron Age* 96:1111-14 N 11 '15

Gas as a case-hardening agent. A. H. White and H. T. Wood. *bibliog* *ii* *Am Gas Light J* 103:259-63, 266 O 25 '15

Materials employed in case hardening. R. A. Millholland. *Iron Age* 96:1041-2 N 4 '15

Protection of parts in case hardening. *Iron Age* 95:304-5 F 4 '15

Use of copper electrolyte in localized case-hardening. W. Paxton. *diag* Mach 21:499 F '15

*See also* Steel, Hardening of

**Cast iron**

Aluminum or iron crank cases; a comparison of the two materials on the bases of weight, strength and cost. V. I. Monieroff. *Ironless Age* 35:582-3 Ap 28 '15

Annealing effect on light gray iron castings. G. S. Evans. *ii* *Foundry* 43:219-21 Jo '15

Annealing gray iron castings. *ii* *Foundry* 43:188 My '15

Chill and shrinkage of cast iron. R. A. Pittman. *Foundry* 43:304 Ag '15

Control of chill in cast iron, considering the elements effective in the manufacture of malleable castings and chilled car wheels. G. M. Thrasher. *ii* *Am Inst Min J* 31:106:2129-38 O '15; Same. *Foundry* 43:491-3-4 D '15; Same. *Iron Tr R* 57:1171-3 J1 16 '15; *Excerpt* (Natural chill of cast iron). *Metal & Chem Eng* 13:39-40 Ja '15

Corrodibility of cast iron and steel. J. N. Friend and C. W. Marshall. *Iron Age* 95:1114-15 My 20 '15

Corrosion of steel and cast iron compared. R. C. McWane and H. Y. Carson. *ii* *Foundry* 43:467-9 N '15

Evolution of the malleable process. J. P. Poro and J. C. Nilsen. *Iron Age* 96:1168-70 N 18 '15

Hard iron. W. J. Keop. *Foundry* 43:359 S '15

Malleable castings specifications. *diag* *Iron Tr R* 57:46-7 J1 1 '15

Malleable iron castings for the automobile industry. R. Moldenke. *Ironless Age* 35:69-73 Ja 13 '15; Same. *Iron Tr R* 56:221-4; *Discussion*. E. Touceda. 56:224 J1 Ja 28 '15

Manufacture and uses of malleable iron. J. P. Poro. *Foundry* 43:441-3 Ap '15

Phosphorus in malleable castings. E. Touceda. *ii* *Iron Tr R* 57:434-6 S 30 '15; Same. *Foundry* 43:446-9 N '15; Same cond. *Iron Age* 96:924-6 O 21 '15

Physical properties vs. analysis. W. J. Keop. *Foundry* 43:126 Mr '15

Practice of the oxy-acetylene welding process. S. W. Miller. *ii* *Mach* 22:108-17 O '15

Recent developments in cast-iron manufacture. J. E. Johnson, Jr. *J Fr Inst* 179:59-63, 171-200 Jan-F '15; *Discussion*. 179:200-13 F '15

Researches in annealing malleable castings. G. W. Storey. *ii* *Foundry* 42:474-8 J1 '14

Specifications for malleable iron. E. Touceda. *Iron Tr R* 56:615-16 Mr 25 '15

Standard specifications for the foundryman. *Foundry* 43:258-61 J1 '15

Sulphur in malleable cast iron. R. H. Smith. *Iron Age* 96:1235 N 25 '15

Surface of molten cast iron. R. A. Pittman. *Foundry* 43:366 S '15

Vanadium from oxide to steel. W. F. Bleeker and W. L. Morrison. *Metal & Chem Eng* 13:492-4 Ag '15

**Cast iron—Continued**

Varying silicon and carbon. A. L. Pollard. *Iron Age* 95:121 Ja 7 '15

See also Car wheels; Chilled iron; Foundry practice; Iron; Iron founding; Iron metallurgy; Pig iron; Spiegeleisen

**Testing**

Bending elasticity of cast iron. A. Ono. *Am Soc M E J* 37:290-1 My '15

Tentative methods—sampling pig and cast iron. Foundry 43:250-80 J1 '15

Testing the hardness of iron castings. G. S. Evans. *Il diag Iron Age* 96:8-10 J1 '15

Tests of malleable iron after skin has been removed. L. Tucedin. *Il Iron Tr R* 55:584-6+ S 24 '14; Same. Foundry 43:13-15 Ja '15; Same cond. *Iron Age* 94:948-50 O 22 '14; Abstract. *Am Soc M E J* 36:0196-7 O '14

Tests of vanadium iron castings. *Il Foundry* 43:179-80 My '16; Same. *Iron Tr R* 57:221-2 J1 29 '15

Tests on the combined bending and torsional strength of cast iron. T. Matsumura and G. Hamabe. *Am Soc M E J* 37:317 Jo '15

**Casto**

Preserving casto in English hospitals. *Sci Am S* 80:326 N 20 '15

**Casting machines**

Continuous casting machine. R. C. Patterson. *Il diag Metal Ind n s* 13:254-5 Jo '15

Continuous rod casting machine. *Il Sci Am* 113:165+ Ag 21 '15

Continuous rod-casting process; construction and operation of a casting machine designed to simplify the manufacture of rods and wire. R. K. Hammond. *Il diag Mach* 21:765-7 My '15

Cost of casting machines for converter plant. H. I. Jones. *Am Inst Min E Bul* 91:1504-5 J1 '14; Same. *Eng & Min J* 98:1047-8 D 12 '14

Mullen rod-casting machine. R. C. Patterson, Jr. *Il Am Inst Min E Bul* 101:919-25 My '15; Same. *Iron Age* 95:996-8 My 6 '15; Same. *Iron Tr R* 57:446-7 J S 2 '15; Abstract. *Am Soc M E J* 37:316-7 Jo '15; Abstract. *Eng M* 49:593-4 J1 '15

**Castles**

Plans and elevations for a castle. J. W. Morton. *Bldg Age* 37:54-6 O '15

**Castor beans**

Studies on enzyme action: the esterase and lipase of castor beans. K. G. Folk and K. Suglura. *Am Chem Soc J* 37:217-30 Ja '15

Studies on enzyme action; some experiments with castor bean urease. K. G. Folk and K. Suglura. *Am Chem Soc J* 36:2166-70 O '14

**Castor oil**

Physical qualities of castor oil. L. G. McVetty. *Automobile* 33:500-1 S 16 '15

**Caats, Plaster.** See Plaster casts**Cataloging**

See also Classification; Indexing

**Catalogs**

Goods that give service which draws trade. *Il diag Metal Work* 83:27-36 Ja 1 '15

How to sell a catalog. L. C. Fay. *Inland Tr* 55:104-6 Ag '15

Trade catalogs—few are useful as now prepared. P. B. Tullman. *Eng Rec* 71:407 Mr 27 '15

**Catalysis**

Catalysis in the gas industry. *Sci Am S* 79:126 F 20 '15

Catalytic agents: their relation to modern methods. *Sci Am S* 80:253 J1 24 '15

Hydrogenation of oils and soft fats. *Sci Am S* 80:99 Ag 14 '15

Influence of temperature in acid catalysis. H. S. Taylor. *Am Chem Soc J* 37:551-7 Mr '15

Nature of the catalysis in the conversion of the cinchon alkaloids into their toxines. H. C. Biddle. *Am Chem Soc J* 37:2088-2112 S '15

One of the mysteries of chemistry. *Sci Am S* 78:367-8 D 5 '14

Rate of conversion of cinchonidine into cinchotoxine. H. C. Biddle and R. H. Butzbach. *Am Chem Soc J* 37:2082-7 S '15

Rate of conversion of cinchonine into cinchotoxine. H. C. Biddle and O. L. Brauer. *Am Chem Soc J* 37:2065-82 S '15

Reactions of sodium ethylate with methyl iodide in absolute ethyl alcohol at 25°. J. C. Robertson, Jr. and S. F. Acree. *Am Chem Soc J* 37:1902-9 Ag '15

Interpretation of the reactions of sodium methylate and sodium ethylate with 1, 2-dinitrobenzene, and 1, 2, 4-dinitrochlorobenzene and 1, 2, 4-dinitrobenzene. S. F. Acree. *Am Chem Soc J* 37:1909-14 Ag '15

See also Colloids

**Bibliography**

Bibliography of the chemistry of gas manufacture. W. F. Rittman and M. C. Whitaker. *U S Bur Mines Tech Pa* 120:17-20 '15

Catch basins. See Sewerages—Catch basins

Catenary construction. See Electric railroads—Construction

Caterpillar tractors. See Tractors

**Caterpillars**

Fighting caterpillars with steam. *Il Sci Am* 112:104 Ja 30 '15

**Cathode ray tube**

Cathode ray tube and its application. M. E. Tressler. *Il diag Gen Elec R* 18:816-20 Ag '15

Characteristics of cathode ray tubes. J. P. Minton. *Il diag Gen Elec R* 18:636-40 J1 '15

Investigation of dielectric losses with the cathode ray tube. J. P. Minton. *Il Am Inst E E Pro* 31:1115-65 Jo '15; Abstract. *Elec W* 60:366 J1 10 '15

**Cathode rays**

Cathode rays and their properties. J. P. Minton. *Il diag Gen Elec R* 18:118 25 F '15

Salts colored by cathode rays. E. Goldstein. *Sci Am S* 79:318-19 My 15 '15

See also Electrons; X rays

**Catskill aqueduct**

Brass in water works construction with special reference to experience on the Catskill aqueduct; abstracts. A. D. Elmh. *Eng & Contr* 43:57-8 Ja 20 '15; Metal Ind n s 12:500 2 D '14; *Munic J* 3:322-3 D 21 '14

Building the earth embankment for Hill View reservoir. A. W. Tidd. *Il plan Eng N* 5:1:500-5 S 9 '15

Cast iron submarine aqueduct. *Il diag Eng Rec* 120:176-8, 180 Ag 20 '15

Catskill aqueduct (tunnels). *Il diag Munic J* 38:78 9 My 27 '15

City tunnel of the Catskill aqueduct. W. E. Spear. *Il diag plan Eng N* 5:1:500-5, 98 103, 118-53, 194 9 Ja 11 F 4 '15; Excerpt. *Eng M* 18:598 900 Mr '15

Design and cost of concrete piers used along Catskill aqueduct. *Il diag Eng & Contr* 43:287-8 Mr 31 '15

Electrically operated contractor's plant for building Kensico dam. A. W. Carroll. *Il Eng Rec* 71:18 20 Ja 2 '15

Narrow flexible joint submarine siphon. J. P. Hogan. *Il diag plan Eng Rec* 70:656 9 D 19 '14

Plant and methods employed in laying the flexible jointed Narrows system of the Catskill aqueduct. S. W. Symons. *Il Eng & Contr* 43:218 19 Mr 10 '15

Tunnel, 400 feet below existing one, replaces short section of damaged Catskill siphon. *Il diag Eng Rec* 71:511-16 Ap 24 '15

Twenty-ton valve lowered down 250 foot shaft in 20 min. R. W. Greenlaw. *Il Eng Rec* 71:181 F 6 '15

Water main under New York harbor from Brooklyn to Staten Island. J. P. Schuyler. *Il diag Munic Eng* 19:37 5 S '15

Yardage record at Kensico dam due, in part, to operation of mixer. G. T. Newbury. *Eng Rec* 71:199 F 13 '15

**Buildings**

Synthetic stone as used in the construction of Catskill aqueduct buildings. H. L. Rogers. *Il diag Concrete Con* 6:125 8, 132-3 Mr '15; Abstract. *Eng M* 49:273 My '15

Cattle dips. See Dipping fluids; Attenley

- Caucasus**  
Copper smelting in the Caucasus. map Eng & Min J 99:650-8 Ap 10 '15  
In and out of the Caucasus in war time. L. C. David. II Eng & Min J 99:477-80 Mr 13 '15
- Causeways**  
Builders of the Galveston causeway toll of the storm's effect. Eng Rec 72:276 Ag 28 '15  
Galveston survives hurricane. II map Eng N 74:424-6 Ag 26 '15  
Galveston's sea-wall checks hurricane's devastation. E. B. Van de Greyn. II diags Eng Rec 73:271-5 Ag 28 '15
- Caves**  
Cave deposit. G. J. Young. diag Econ Geol 10: 186-90 F-Mr '15
- Cedar**  
Spanish cedar. II Sci Am S 78:372-3 D 12 '14  
Western red cedar men meet. Elec R & W Elec'n 69:164 Ja 23 '15  
See also Northern white cedar association
- Cedar Rapids, Iowa**  
**Bridges**  
Construction features of the duplicate reinforced concrete arch bridges at Third ave., Cedar Rapids, Iowa. diags Eng & Contr 42:148-50 Ag 12 '14
- Cedars Rapids, Quebec**  
Cedars hydro-electric development. St. Lawrence river. II diags plan Eng N 73:566-73, 611-13 Mr 25-Apr 1 '15
- Ceilings**  
Lighting of rooms through translucent glass ceilings; with discussion. R. J. Edwards. II Illum Eng Soc 9:1011-20 no 9 '14  
See also Mural painting and decoration; Plaster and plastering
- Celestial globes**  
Celestial globe and tellurian. II Sci Am 113: 61 Ji 17 '15
- Cello canal**  
Connecting Idaho with the sea; completion of the Cello canal along the Columbia river. R. W. Vincent. II Sci Am 112:476 My 22 '15
- Cells**  
Thermal insulation of high-temperature equipment. P. A. Bock. diags Am Inst Min E Bul 104:1539-50 Ag '15; Discussion. 108: 2513-19 11 '15
- Cellars**  
How to drain low cellar. plan Dom Eng 72: 201 Ag 14 '15  
Storage cellar built of concrete. P. H. Wilson. II Bldg Age 37:64 Mr '15  
See also Basements
- Cellon**  
Substitute for glass in automobiles. Sci Am 112:401 My 1 '15
- Cellose octacetate**  
Isomeric alpha and beta octacetates of maltose and of cellose. C. S. Hudson and J. M. Johnson. Am Chem Soc J 37:1276-80 My '15
- Cells**  
Cultivation of living thymus outside the body. Sci Am 8 79:147 Mr 6 '15
- Celluloid**  
Contributions of the chemist to the celluloid and nitrocellulose industry. R. C. Schupp-haus. J Ind & Eng Chem 7:290 Ap '15
- Cellulose (hydrate)**  
New casing for sausages. W. P. Cohen, R. C. Fox and A. J. Acton. Sci Am 112:235+ Mr 6 '15
- Cement**  
Accounting for cement packages. G. Wilson. J Account 19:194-205 Mr '15  
Air analyzer for determining the fineness of cement. J. C. Pearson and W. H. Sligh. II diags U S Bur Stand Tech Pa 48:1-74 '15; Abstract. Eng & Contr 44:352-3 N 8 '15; Excerpt. Eng N 74:475 S 2 '15; Summary. J R Inst 178:712-14 Jo '15; Summary. Eng Rec 71:787 Jo 12 '15  
Cement market in Dominican republic. Concrete Cem 6:21 Ja '15  
Chemical similarities of hydraulic cements, and reflections thereon. G. B. Upton, Sibley J 29:220-2 Ap '15
- Contributions of the chemist to the cement industry. G. S. Brown. J Ind & Eng Chem 7:277-8 Ap '15  
Decade's change in output of cementing materials. R. C. Bockel. Eng Rec 70:701 D 26 '14  
Electric motors in the Portland cement industry. Elec W 65:111 Ja 9 '15  
Finer grinding and higher SO<sub>2</sub> in Portland cement. P. H. Bates. Eng N 74:138-9 Al 15 '15  
High-strength concretes produced through lowering of surface tension of mixing water. N. C. Johnson. II Eng Rec 71:320-1 Mr 13 '15  
Hydration of Portland cement. A. A. Klein and A. J. Phillips. pls U S Bur Stand Tech Pa 43:3-71 '14  
Investigation of the durability of cement drain tile in alkali soils. R. J. Wig and C. M. Williams. diags pls U S Bur Stand Tech Pa 44:1-56 '15; Excerpts. Concrete Cem 7:145-7 O '15  
Magnesia cement. C. H. B. Buriton. Engineer 119:471-2 My 14 '15  
Mechanical features of the hydration of Portland cement and the making of concrete as revealed by microscopic study. N. C. Johnson. II Am Soc M 10 J 37:516-25 S '15; Abstracts. Eng M 49:744-5 Ag '15; Am Gas Light J 103:283-4 N 1 '15; Discussion. Am Soc M 10 J 37:525-8 S '15  
Petrographic study of Portland cement. R. J. Colony. bibliog II Sci Minn Q 36:1-21 N '14  
Probable life of Portland cement sluice on metal fabric. Concrete Cem 7:151-5 O '15  
Reduced production of Portland cement in 1914. Eng Rec 71:44 Ja 9 '15  
Standardization of no. 200 cement sieves. R. J. Wig and J. C. Pearson. pls U S Bur Stand Tech Pa 42:1-51 '14  
Statement of losses of cement at various prices; table. A. Moyer. Eng Rec 71:783-4 Jo 18 '15  
Using bulk cement on railway construction work. M. D. Campbell. II Ity Age 58:1441-3 Jo 18 '15  
Why is a barrel the unit of cement measure? Concrete Cem 7:83 Ag '15  
See also Concrete; Dental cements; Gunite; Lime; Mortar; Pavements; Stucco; also headings beginning Cement
- Exhibitions**  
Annual cement show at Chicago. II Bldg Age 37:59-63 Mr '15
- Patents**  
Co-operation in small building development. P. H. Roworth. Concrete Cem 6:42 Ja '15
- Specifications**  
Standard specifications for cement. Am Gas Light J 103:125 Ag 23 '15
- Testing**  
See Cement testing
- Cement bags.** See Cement sacks
- Cement clinker**  
British Portland cement making machinery; cooling of cement clinker. diags Engineer 120:126-8 Ag 6 '15  
Constituents of Portland cement clinker. (1. A. Rankin. J Ind & Eng Chem 7:466-74 Jo '15  
Function of ferric oxide in the formation of Portland cement clinker. R. D. Campbell. II J Ind & Eng Chem 7:835-7 O '15
- Cement gun**  
Cement gun for relining old brick and ashlar sewers. L. Chivvis. II Eng N 74:339-40 N 11 '15  
Cement-gun furnace repairs. Eng & Min J 99:866, My 15 '15  
Dry, coarse sand best for cement gun in wet climate. Eng Rec 72:491 O 16 '15  
Experience with cement guns in levee revetment. W. C. Cuples. Eng & Contr 44:397-8 N 17 '15
- Cement kilns**  
British Portland cement making machinery. II diags Engineer 119:373-4, 498-9; 120:81-2 Ap 16, My 21, Ji 23 '15

**Chemical engineering—Continued**

Chemical engineering versus engineering chemistry. C. S. Palmer. *Met & Chem Eng* 13: 203 Apr '15

Columbia university establishes a separate department of chemical engineering. *Met & Chem Eng* 13:475-6 Ag '15

Co-operation between university and industry. *Met & Chem Eng* 13:885-7 D 1 '15

See also Chemistry, Technical; Drying; Metallurgy; Waste products

Chemical engineers, American Institute of. See American Institute of chemical engineers

Chemical engines. See Fire engines, Motor

**Chemical equilibrium**

Equilibrium between carbon oxysulfide, carbon monoxide and sulfur. G. N. Lewis and W. N. Lacy. *diag Am Chem Soc* J 37:1976-83 S '15

Equilibrium in the system: lead acetate, lead oxide, and water, at 25°. R. F. Jackson. *Am Chem Soc* J 36:2346-57 N '14; *Summ. U S Bur Stand Bul* 11:331-45 My 10 '15

**Chemical industries**

Accident prevention in the chemical industries. F. W. Keough. *Met & Chem Eng* 13:731-4 O 15 '15; *Excerpts. Am Ind* 10:23-3 N '15

Aspects of some chemical industries, in the United States, today. J. Gudeman. *J Ind & Eng Chem* 7:151-5 F '15

Chemical industries of Austria-Hungary and the war; abstract. J. Donath and G. Ulrich. *Met & Chem Eng* 13:639-40 S '15

Chemical industries of Germany. P. K. Frankland. *Met & Chem Eng* 13:378-87 Je '15; *Same. Sci Am* 8 79:389-90, 402-3 Je 19-26 '15

Chemical industry and German competition. *Engineer* 119:90 Ja 22 '15

Chemical trade and the war. *Engineer* 120:379 O 22 '15

Chemical trade of the United States in 1914. *J Ind & Eng Chem* 7:629-30 J1 '15

Chemical trade situation in Germany and Great Britain. *Met & Chem Eng* 13:59-61 Ja '15

Coal-tar chemical industry in Germany and America. *Sci Am* 8 80:240 O 9 '15

Co-partnership in chemical industries. W. H. Laver. *Engineer* 120:91 J1 23 '15

Developments in German-American trade in chemicals. *J Ind & Eng Chem* 7:78 Ja '15

Doing without Europe. *Sci Am* 112:176 F 20 '15

Effect of the war on American industries. J. K. Pratt. *Sci Am* 112:230 S 11 '15; *Same cond. (Opportunities for the American chemical industry) Met & Chem Eng* 13:729-31 O 15 '15

Effect of the war upon the American chemical industries. J. H. Janow. *Eng Soc W Pa* 31:381-400; *Discussion. 31:400-16 Je '15*

Foreign markets for American chemicals. T. H. Norton. *Met & Chem Eng* 13:758-62 O 15 '15

German chemical industry and the war. *Eng & Min J* 99:774-5 My 1 '15

Government co-operation with our industries. *Sci Am* 112:99 Ja 30 '15

Hearing of the proposed amendment of the patent laws. L. H. Backlund and others. *Met & Chem Eng* 13:78-81 F '15

Manchester meeting of the Society of chemical industry. *Met & Chem Eng* 13:548-6 S 1 '15

Report of the Chemical and dyestuff committee of the New York section of the American chemical society. *Met & Chem Eng* 12:753-6 D '14

Research and industry. *Sci Am* 112:916-17 Je 19 '15

Resources and possibilities of chemical industry in the Southwest. K. Baruch. *Met & Chem Eng* 13:604-8 S 15 '15

Status of the chemical industries in the United States at the end of 1915. I. M. Stone. *J Ind & Eng Chem* 7:991-3 N '15; *Same. Sci Am* 8 80:286-7 O 30 '15; *Abstract. Met & Chem Eng* 13:710, 828 O 15, N 16 '15

War and our chemical industries; symposium; with discussion. *J Ind & Eng Chem* 7:59-64 Ja '15

War and the chemical industry. W. H. Nichols. *J Ind & Eng Chem* 7:131-6 F '15

War and the chemical trade. *Engineer* 119:115 Ja 29 '15

What Germany is doing in the chemical and metallurgical industries. *Eng & Min J* 99: 829 My 8 '15; *Same cond. Sci Am* 8 80:5 J1 3 '15

See also Chemical research; Chemicals; Chemistry, Technical; Dye industry; Potash

**Exhibitions**

National exposition of chemical industries; summary of exhibits and lists of papers read. *J Ind & Eng Chem* 13:699-700, 731-5 O 1-15 '15

Chemical industries, National exposition of. See National exposition of chemical industries

Chemical industry, Society of. See Society of chemical industry

**Chemical laboratories**

Chemical department of the Illinois traction system. N. R. Beagle. *Elec Ry J* 45:423 F 27 '15

**Chemical patents**

Application for and prosecution of applications for United States letters patent. S. C. Mastick. *J Ind & Eng Chem* 7:874-83 O '15

Coal-tar dyes and the Patric bill; compulsory working of patents. B. C. Hesse. *J Ind & Eng Chem* 7:963-74; *Discussion. I. M. Stonebraker; B. C. Hesse. 7:974-8 N '15*

Contractual rights relating to letters patent; Actions for infringements. S. C. Mastick. *J Ind & Eng Chem* 7:984-91 N '15

Hearing of the proposed amendment of the patent laws. L. H. Backlund and others. *Met & Chem Eng* 13:78-81 F '15

Theory and statement of the law relating to patents generally and to patents for compositions of matter and chemical processes specifically. S. C. Mastick. *J Ind & Eng Chem* 7:789-97 S '15

**Chemical reaction**

Action of trioxymethylene on *p*-xylene in the presence of aluminum chloride. R. C. Hutton and J. T. Ewing. *Am Chem Soc J* 37: 2394-9, 2401 O '15

Addition compounds of organic substances with sulfuric acid. J. Kendall and G. D. Carpenter. *Am Chem Soc J* 36:3198-517 D '14

Chemical reactions at low pressures. I. Langmuir. *Am Chem Soc J* 37:1139-67 My '15; *Abstract. J Ind & Eng Chem* 7:349-61 Ap '15

Abstract. *Met & Chem Eng* 13:244-6 Ap '15

Chemical reactions in anhydrous hydrazine. T. W. H. Welsh and W. J. Bradshaw. *diag Am Chem Soc J* 37:825-32 Ap '15

Electron reaction of valence: the theory of electrolytic dissociation and chemical action. K. G. Fulk and J. M. Nelson. *Am Chem Soc J* 37:1732-48 J1 '15

Interaction of hydrogen and chlorine under the influence of alpha particles. H. S. Taylor. *diag Am Chem Soc J* 37:21-38 Ja '15

Oxidation and reduction without the addition of acid: the reaction between ferrous sulfate and potassium dichromate. M. Neldi and J. C. Witt. *Am Chem Soc J* 37:2369-8 O '15

Reactions in liquid ammonia. J. C. Franklin. *Am Chem Soc J* 37:2279-95 O '15

Reactions of sodium ethylate with methyl iodide in absolute ethyl alcohol at 25°. H. C. Robertson, Jr. and S. F. Acree. *Am Chem Soc J* 37:1802-9 Ag '15

Reinterpretation of the reactions of sodium methylate and sodium ethylate with 1, 2-dinitrobenzene, and 1, 2, 4-dinitrobenzene, and 1, 2, 4-dinitrobenzenes. S. F. Acree. *Am Chem Soc J* 37:1909-14 Ag '15

Study of the reactions of sodium malonate. C. L. Jackson and P. C. Whitmore. *Am Chem Soc J* 37:1523-27, 1515-34 Jr. Ag '15

Theory of chemical reaction and reactivity. M. C. Baly. *Am Chem Soc J* 37:1979-93 My '15

See also Chemical reagents

**Chemical reagents**

Nephelometric estimation of phosphorus. P. A. Kober and G. Kogerer. *Am Chem Soc J* 37: 2373-81 O '15

Reagents for use in gas analysis; alkaline pyrogallol. R. P. Anderson. *diag J Ind & Eng Chem* 7:587-96 J1 '15

Chemical reduction. See Reduction, Chemical

#### Chemical research

Cooperation in matters chemical; presidential address. C. H. Herty. *Am Chem Soc J* 37: 2231-46 O '15

Development of chemical research in America. I. Remsen. *Am Chem Soc J* 37:1-7 Ja '15

Research in chemical industry. C. F. Burgess. *Met & Chem Eng* 13:921 D 1 '15

See also Chemical laboratories; Chemistry, Technical

#### Chemicals

Advance in chemical prices due to the war. *Eng & Min J* 100:331 N 20 '15

Balance of trade in chemicals between the United States and Germany in 1913. *J Ind & Eng Chem* 6:1034-5 D '14

See also Chemical industries

#### Statistics

Need of revised chemical statistics. B. C. Hesse. *J Ind & Eng Chem* 7:58-9 Ja '15

#### Chemistry

See also Acids; Air; Alkalies; Assaying; Atomic weights; Atoms; Catalysis; Combustion; Crystallography; Dissociation; Earths, Rare; Electrochemistry; Evaporation; Gases; Hydrates; Indicators and test papers; Ions; Metallurgy; Photochemistry; Radioactivity; Reduction, Chemical; Salts; Spectrum analysis; Solution (chemistry); Stereochemistry; Substitution (chemistry); Thermochemistry; also headings beginning Chemical and names of chemical elements and substances

#### Apparatus

See Chemical apparatus

#### Study and teaching

Recent tendencies in high school chemistry. R. H. Bradbury. *J Pr Inst* 180:449-61 O '15

#### Chemistry, Analytic

Electro-titrimetric method and its application to general analytical chemistry. P. H. Hoesink van Suchtelen and A. Luno. *Am Chem Soc J* 36:1793-1803 S '14

Influence of hydroxy acids and lactones upon determinations of the chemical constants of fatty acids. C. A. Browne. *J Ind & Eng Chem* 7:30-4 Ja '15

Results of some co-operative work on determination of sulfur in pyrites. II. C. Moore. *J Ind & Eng Chem* 7:634-6 Ji '15

Two methods of separation of the metals of the alkaline-earth group. A. G. Peterson. *Am Chem Soc J* 37:2346-52 O '15

Use of the interferometer for the analysis of solutions. L. H. Adams. *diag Am Chem Soc J* 37:1181-94 My '15

See also Assaying; Drugs—Analysis; Electrolysis; Gas analysis; Graining-copper method; Soil analysis; Volumetric analysis; also names of substances analyzed, e. g. Coal—Analysis, Steel—Analysis, Water—Analysis

#### Qualitative

Qualitative test for water by the use of the acetylene-cuprous chloride reaction. G. H. Wouwer. *Am Chem Soc J* 36:2462-8 D '14

#### Quantitative

Comparative study of methods for the quantitative determination of sulfur in peptone. H. W. Redfield and C. H. Huckle. *Am Chem Soc J* 37:807-11 Mr '15

Gibbs medal award; address of acceptance. A. A. Noyes. *J Ind & Eng Chem* 7:450-1 My '15

Nephelometry (photometric analysis); history of method and development of instruments. P. A. Kober and S. S. Graves. *diag J Ind & Eng Chem* 7:843-7 O '15

Quantitative determination of fluorine. W. H. Adolph. *diag Am Chem Soc J* 37:2500-15 N '15

Quantitative determinations of sulfur in the culture medium for the detection of the bacteria producing hydrogen sulfide. H. W. Redfield and C. H. Huckle. *Am Chem Soc J* 37: 612-23 Mr '15

Chemistry, Biological. See Biological chemistry

#### Chemistry, Inorganic

Recent work in inorganic chemistry. J. L. Lowe. *Am Chem Soc J* 37:536-49 Mr '15

See also Metals

#### Chemistry, Medical and pharmaceutical

Contributions of the chemist to the manufacture of pharmaceutical products. F. R. Eldred. *J Ind & Eng Chem* 7:939-40 N '15

See also Drugs—Analysis

#### Chemistry, Organic

Electrochemical production of organic compounds. *Met & Chem Eng* 13:211-13 Ap '15

See also Acids, Fatty; Alcohols; Aldehydes; Essential oils; Esters; Gas; Hydrocarbons; Ketones; Proteins

Chemistry, Photographic. See Photographic chemistry

#### Chemistry, Physical and theoretical

Gas manufacture from the point of view of physical chemistry. W. F. Rittman. *Am Gas Inst Pro* 9:pt 1, 283-300 '14; Same cond. *Am Gas Light J* 101:395-7 D 21 '14; Same cond. *J Ind & Eng Chem* 6:1037-30 D '14; Discussion. *Am Gas Inst Pro* 9:pt 1, 300-4 '14

Salts colored by cathode rays. E. Goldstein. *Sci Am S* 70:318-19 My '15

See also Atomic weights; Atoms; Boiling points; Catalysis; Chemical reaction; Colloids; Crystallography; Dissociation; Electrochemistry; Electrolysis; Electrons; Freezing points; Ions; Isomerism; Liquid air; Melting points; Molecular weights; Optical rotation; Photochemistry; Radioactivity; Solution (chemistry); Stereochemistry; Thermodynamics; Valence; Vapor density

#### Chemistry, Technical

America as her own chemist; first National exposition of chemical industries. *Sci Am* 113:302-4 O 2 '15

Applied chemistry. L. H. Buckeland. *Met & Chem Eng* 13:477-82 O 1 '15; Same. *J Ind & Eng Chem* 7:978-81 N '15; Same. *Sci Am S* 80:294-5 N 6 '15

Chemical lime. *Sci Am S* 80:47-8 Ji 17 '15

Contributions of the chemist to American industries; symposium. *J Ind & Eng Chem* 7:273-304, 931-45 Ap, N '15

Contributions of the chemist to the industrial development of the United States—a record of achievement. R. C. Howe. *J Ind & Eng Chem* 7:293-304 Ap '15; Same. *Sci Am S* 79: 210-11, 234-5 Ap 3-10 '15; Abstract. *Met & Chem Eng* 13:287-8 My '15; Abstract, with discussion. *Textile World* 40:53-5, 74-5+ Ap '15

Contributions of the chemist to various American industries; symposium. *Met & Chem Eng* 13:283-8 My '15

Germany as nature's competitor. *Sci Am* 113: 442 N 20 '15

Industrial uses for liquid air. *Eng M* 49: 118-21 Ap '15

Problems of chemical industry. H. F. Bacon. *J Ind & Eng Chem* 7:635-8 Jo '15

Research and progress in American manufacture. H. F. Bacon. *Sci Am S* 80:334-5 N 20 '15

Society of chemical industry annual meeting. *Engineer* 120:91-2 Ji 23 '15

Substitutes for metals, minerals and their products. *Eng M* 49:592-3 Ji '15

See also Acetylene; Alcohol, Denatured; Alkalies; Ammonia; Baking powder; Barium; Bleaching; Celluloid; Cement; Chemical engineering; Chemical industries; Coal-tar colors; Coal-tar products; Corrosion and anti-corrosives; Cyanide process; Distillation; Dyes and dyeing; Electrochemistry; Essential oils; Explosives; Fuel; Gas; Gas mantle; Gas manufacture and works; Glucose; Gums and resins; Hydrometallurgy; Ink; Metallurgy; Oils and fats; Oxonides; Packing house products; Paint; Paper making and trade; Perfumery; Petroleum; Potash; Precious stones, Artificial; Precious stones, Synthetic; Refractory materials; Rubber; Rubber, Artificial; Soap; Sugar; Sulphuric acid; Tar; Textile industry and fabrics; Waste products; Wood distillation; Wood preservation



**Chemists**

Applied chemistry. L. H. Baekeland. Met & Chem Eng 13:677-81 O 1 '15; Same. J Ind & Eng Chem 7:978-81 N '15; Same. Sci Am 58:294-5 N 6 '15

Coöperation in matters chemical; presidential address. C. H. Herty. Am Chem Soc J 37:2281-46 O '15

Development of chemical research in America. I. Kemslen. Am Chem Soc J 37:1-7 Ja '15

Plea for a chemists' protective association. R. G. Myers. J Ind & Eng Chem 7:798-801 S '15

**Chesapeake & Ohio Northern railroad**

New line of the Chesapeake & Ohio Northern. diags map Ity Age 58:1017-18 My 14 '15

Thirty miles of Chesapeake & Ohio Northern begun. map Eng Rec 72:300-1 S 4 '15

**Chesapeake and Ohio railway**

37th annual report. Ity Age 59:591-2, 624-6 O 1 '15

**Chess player, Automatic**

Torres and his remarkable automatic devices. 11 diags Sci Am S 80:296-8 N 6 '15

**Chester, Pennsylvania****Bridges**

Balanced cantilever reinforced-concrete bridge. H. J. Quimby. 11 diags Eng N 73:578-81 Mr 25 '15

**Chestnut**

American chestnut tree. S; B. Detwiler. 11 map Am For 21:957-60 O '15

Chestnut in the future. Am For 21:967-8 O '15

Commercial uses of chestnut. I. L. Buttrick. 11 Am For 21:960-7 O '15

**Chicago, Illinois**

Chicago, the A. R. B. A. convention city. 11

Good roads n s 8:199-203 D 5 '14

Topography of the bed-rock under Chicago. R. Peattie. maps W Soc 19 J 19:590-4 Jo '14;

Same cond. Eng & Contr 42:605-7 D 30 '14;

Discussion. W Soc 19 J 19:594-611 Jo '14

See also Field museum of natural history

**Architecture**

Chicago's 1914 progress in building. 11 Bldg Age 37:46-8 E '15

Design and construction of the Chicago Hebrew Institute: a reinforced concrete structure possessing unusual features. 11 plans Eng & Contr 43:558-63 Jo 23 '15

**Bridges**

Design, construction and detailed labor costs of the substructure of the double-leaf trunnion bascule bridge at Chicago avenue, Chicago. diags plan Eng & Contr 42:388-90, 426-33 O 21 N 4 '14

Double-deck bascule bridge over Chicago river. 11 E. Young. 11 diags Eng N 74:876-9 N 4 '15

Substructure for the Jackson street bridge over the Chicago river. 11 diags Eng N 73:550-2 Mr 18 '15

Substructure of the Lake street bascule bridge. E. E. Young. 11 Eng N 74:934-5 N 11 '15

Two large lift bridges at Chicago. diags Engineer 120:339-40 O 8 '15

**Harbor**

Chicago breakwater extensions. diags Eng N 74:740-1 O 14 '15

**Health department**

Report on work of ventilation division of the Chicago health department for 1913. E. V. Hill. diags Am Soc Heat & V 18:50:57-73 '14

Ventilating division of the health department, Chicago. Ill. E. V. Hill. 11 diags Am Soc Heat & V 18:19:412-34 '13

**Hospitals**

Chicago municipal tuberculosis sanitarium. C. A. Erikson. 11 plans Brickb 24:267-72, pl 161-7 N '15

**Hotels**

New Morrison hotel plant. T. Wilson. 11 plans Power 42:70-3, 111-15 J1 20-27 '15

**Lighting**

Nitrogen-filled lamps in Chicago. 11 Elec W 65:1173-4 My 8 '15

Street lighting in Chicago. I. W. Haynes. 11 Illum Eng Soc 10:281-8 no 3 '15; Same cond. Am Gas Light J 402:316-17 My 17 '15

Street lighting in Chicago: report. Elec R & W Elec'n 87:481 S 11 '15

**Municipal pier**

Chicago municipal pier. 11 diags Eng N 74:193-7 J1 29 '15

Longest municipal pier in United States is nearing completion at Chicago. 11 diags Eng Rec 71:778-80 Jo 19 '15

Severe tests show Chicago municipal pier to be sound in construction. 11 Eng Rec 72:75 J1 17 '15

Superstructure of Chicago municipal pier. 11 Eng N 74:306-8 Ag 12 '15

**Ordinances, etc.**

Chicago flat-slab ordinance; discussion. Eng N 72:1274-7 D 24 '14

**Public works**

Central plant will handle repairs to all city equipment. 11 plan Eng Rec 72:266-7 Ag 28 '15

Chicago's municipal repair shop. C. C. Sauer. 11 Munic Eng 48:289-91 My '15

See also Chicago—Municipal pier

**Railroads**

Alternative plans for rearranging Chicago freight terminals. plans Ity R 56:809-72 Jo 28 '15

Chicago Elevated medical methods. H. K. Fisher. 11 Elec Ity J 45:1192-5; 46:216-19, 430-4 Jo 26, Ag 7, S 11 '15

Chicago freight interchange yard. 11 plans Eng N 73:1153-6 Jo 17 '15

Chicago track elevation; Rock Island lines. 11 diags Eng N 73:670-6 Ap 8 '15

Report of Chicago railway terminal commission. Ity Age 58:1193-1 Jo 4 '15; Abstract. Eng N 74:42 J1 1 '15

Rock Island track elevation work at Chicago. 11 diags Ity Age 58:600-1 Mr 26 '15

Santa Fe to solve Chicago fruit terminal problem. plan Eng Rec 71:819-20 Jo 26 '15

Three-level railway crossing at Chicago. 11 diags plans Eng N 73:708 10 Ap 15 '15

Track elevation on the Nickel Plate railroad at Chicago. 11 diag map Eng N 74:888-91 N 4 '15

Transportation in Chicago during a traction strike. 11 Ity Age 58:1469-74 Jo 25 '15

**Rapid transit**

Commission fixes service standards in Chicago. Elec Ity J 40:775 O 3 '15

Safety of trains on the Chicago elevated. 11 Elec Ity J 46:303-5 Ag 21 '15

**Sanitary affairs**

Chicago should no longer depend on sewage dilution. Eng Rec 72:394 4 26 '15

Chicago's sewage and water-supply problem. Eng N 73:1189 Jo 17 '15

Future sanitary problem of Chicago; symposium. W Soc 19 J 19:757-75 O '14

Recommend filtering Chicago water and progressive disposal of sewage. G. A. Sober, J. D. Watson and A. J. Martin. Eng Rec 71:709 Jo 5 '15

See also Chicago—Streets; Chicago Water supply

**Stock yards**

Two years' tests indicate best treatment for Chicago stock yards wastes. 11 Eng Rec 71:266-8 E 27 '15

**Streets**

Chicago plan and the new heavy-traffic streets. W. D. Moody. map Eng N 73:482-3 Mr 11 '15

Chicago takes a traffic census of the loop. Eng Rec 72:364 4 18 '15

Street cleaning in Chicago. Munic J 84:35 Ja 14 '15

Traffic count on Chicago streets. Elec Ity J 46:622-3 S 25 '15

**Subways (conduits)**

Chicago builds its first utility gallery. plan Eng Rec 72:593-4 N 18 '15

**Chicago—Subways (conduits)—Continued**

Design and construction features of Chicago's first utilities gallery. *Il Eng & Contr* 44:376-7 N 10 '15

Pipe subways for the public utilities of Chicago. L. A. Dumond. *Eng Rec* 70:705-6 D 28 '14

Subways for public-utility pipes and wires in Chicago streets. *Eng N* 73:60-1 Ja 14 '15

**Water supply**

Chicago water works notes. *Il Munic J* 37:918-19 D 24 '14

Chicago's new tunnel and pumping station part of comprehensive waterworks plan. H. S. Baker. map *Eng Rec* 71:73-4, 103-4 Ja 16-23 '15

Constructing shaft and tunnel at Lake View pumping station. H. W. Clausen. *Eng & Contr* 42:500-1 N 25 '14

Wilson avenue water tunnel at Chicago. *Eng plan* *Eng N* 73:764-7 Ap 22 '15

**Chicago & Alton railroad**

Abstract of annual report. map *Ry Age* 59:795-6 O 29 '15

**Chicago & Eastern Illinois railroad**

Abstract of annual report. map *Ry Age* 59:996-7 N 26 '15

**Chicago and North Western railway**

Fifty-sixth annual report. map *Ry Age* 59:635-6, 672-3 O 8 '15

Valuation work. *Eng N* 74:843-5 O 28 '15

Chicago, Burlington & Quincy railroad company Sixty-first annual report. map *Ry Age* 59:944-5, 1033-6 N 26 '15

**Chicago central station institute**

Training men for the central-station industry. *Il Elec W* 66:962-4, 1142-4 O 30, N 20 '15

**Chicago drainage canal**

Report on water-power development on the Chicago drainage canal. *Eng N* 72:1139 D 3 '14

**Chicago Great Western railroad**

Abstract of annual report. map *Ry Age* 59:995-6 N 26 '15

**Chicago, Lake Shore & South Bend railway**

Seven years of operating experience of a single-phase interurban railway. *Il map Elec Ry J* 46:940-5 N 6 '15

**Chicago, Milwaukee & St. Paul railway**

Bridge work of the C., M. & St. P. Ry. *Il plan Ry* 11 56:336-8 Mr 13 '15

C., M. & St. P. railway high-voltage direct-current system. *Elec W* 64:1186 D 19 '14

Electric traction on the Chicago, Milwaukee & St. Paul Ry. *Eng map Eng N* 73:22-3 Ja 7 '15

Electrification. *Eng map Engineer* 119:104-6 Ja 29 '15

Electrification. C. A. Goodnow. *W Soc* 10 J 20:327-30 Ap '15

Electrification of 440.5 miles of the St. Paul. *Il map Ry Age* 59:683-9 O 15 '15

Electrification of terminal line at Great Falls, Mont. *Il Ry R* 57:57-8 J1 10 '15

Electrification of the Great Falls terminal. *Il Elec Ry J* 45:1172-3 Ju 19 '15

Electrification of the Puget Sound lines. A. H. Armstrong. *Il Eng maps Gen Elec* 11 18:5-9 Ja '15; Same. *Ry Age* 57:1125-6 D 18 '14; Same. *Elec R & W Elec N* 66:1205-8 D 26 '14; Same. *Il Ry* 56:96-100 Ja 16 '15

Electrification progressing rapidly. *Eng N* 74:822 O 28 '15

1500-volt electrification of the Chicago, Milwaukee & St. Paul railway. W. D. Beards. *Il Gen Elec* 11 18:644-5 J1 '15

51st annual report. map *Ry Age* 59:589-90, 628-30 O 1 '15

Great railway electrification project. *Il map Sci Am* 8 79:56-8 Ja 23 '15

New line from Lewistown, Mont., to Great Falls. *Il map Ry Age* 58:734-9 Ap 2 '15

Operating plans for the electrified division of the C., M. & St. P. *Il Elec Ry J* 44:1341-2 D 19 '14

Progress on the electrification. *Il Elec R & W Elec N* 67:769-71 O 23 '15; *Elec Ry J* 48:794-8 O 16 '15; *Eng Rec* 73:518 O 23 '15; *Ry R* 57:556-8 O 30 '15; *Power* 42:845-6 N 9 '15

Transmission system of the electrified divisions. R. E. Wade. *Il Ry R* 57:203-5 Ag 14 '15

**Chicago, Milwaukee & St. Paul roadmasters' association**

9th annual meeting, Milwaukee, Wis., Nov. 3-4. *Ry Age* 59:972 N 19 '15

**Chicago, Rock Island & Pacific railroad**

Annual meeting of the stockholders, April 12. *Ry Age* 58:831-2 Ap 16 '15

Chicago, Rock Island & Pacific—1902 to 1915. *Ry Age* 58:774-6 Ap 9 '15

Decrease in earning power of the Chicago, Rock Island & Pacific, 1902-1914. *Ry Age* 58:611 Mr 19 '15

Hearing before the Interstate commerce commission. *Ry Age* 58:1228-9 Jo 11 '15

Increase in volume of service rendered by the Rock Island 1902-1914. *Ry Age* 58:683 Mr 26 '15

Interstate commerce commission's report. *Ry Age* 59:323-7 Ag 20 '15

Investigation of the Rock Island system. *Ry R* 56:321-2 Mr 6 '15

Receivership. *Ry Age* 58:890 Ap 23 '15

Rock Island financing. *Ry R* 57:243-9 Ag 21 '15

Rock Island receivership. *Ry R* 56:567-8 Ap 24 '15

Rock Island's financing again. *Ry Age* 58:874-5 Ap 23 '15

**Chicago, St. Paul, Minneapolis and Omaha railway**

Thirty-fourth annual report. *Ry Age* 59:637, 674 O 8 '15

**Chicory**

Manufacture of chicory; a Franco-Belgian industry stopped by the war. J. Boyer. *Il Sci Am* 8 80:40-2 J1 17 '15

**Chief Interchange car inspectors' and car foremen's association**

17th annual convention, Richmond, Va., Sept. 14-16. *Ry Age* (Mech ed) 89:522-5 O '15

**Chiefs of police, international association of, and international association of chiefs of police**

Chiggers

Harvest disease. *Sci Am* 8 80:100 Ag 14 '15

**Chihuahua, Mexico**

Main mineral zone of the Santa Eulalia district. J. Prescott. *Eng map Am Inst Min* 10 Bul 98:155-98 F '15

**Child labor**

Educational scrap heap and the blind alley job. L. W. Dooley. *Sci Am* 8 79:170-1 Mr 13 '15; Excerpts. *Il Sci Am* 112:247 Mr 13 '15

Pennsylvania's new compulsory continuation schools. H. K. Miles. *Am Ind* 16:28-9 N '15

**Children's museums**

Children's museum. *Sci Am* 112:250 Mr 13 '15

**Chile****Commerce**

Mineral exports of Chile. *Eng & Min J* 100:447 S 11 '15

Trade of Chili in 1914. *Am Ind* 16:44-5 O '15

**Economic conditions**

West coast business. M. R. Lamb. *Il Eng & Min J* 99:433-7 Mr 6 '15

**Finance**

Banking and credit in Argentina, Brazil, Chile, and Peru. R. N. Hurley. *U S Bur For & Dom Com* 90:1-73 '14

Financial developments in South American countries. W. H. Lough. *U S Bur For & Dom Com* 103:89-34 '15

**Industries and resources**

American metallurgist in the Chile nitrate field. *Eng & Min J* 99:352-3 Ja 30 '15

Braden copper co.'s concentrator at Sewall. *Eng & Min J* 100:894-5 N 27 '15

Chilean nitrate industry. M. R. Lamb. *Il Eng & Min J* 99:811-15 My 8 '15

Early history of Braden mines, Sewall, Chile. W. Braden. *Il Eng & Min J* 100:389-91, 398-9 S 4 '15

**Chile—Industries and resources—Continued**

Gold and silver in Chile. *Mr. R. Lamb.* *II Eng & Min J 99:847-9* My 15 '15  
**Mining methods at Braden.** *II R. Graham.*  
*Eng & Min J 100:831-3* N 30 '15  
 Potash deposits in Chile. *S. Salcedo.* *Eng & Min J 100:318* Ag 7 '15  
 Smelting at Panulillo, Chile. *II Eng & Min J 100:787-9* N 13 '15  
 Tofo iron mines in 1914. *C. A. Buck.* *map Eng & Min J 99:145-6* Ja 16 '15

**Chile exploration company, Chuquicamata, Chile**  
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*87-92* Ja 2-9 '15

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**Chilled iron**

Association of manufacturers of chilled iron wheels; presidential address. *G. W. Lyndon.*  
*Ity R 67:505-6* O 16 '15; Same cond. *Ity Age*  
*59:690* O 15 '15; Same cond. *Ity Age (Mech*  
*ed)* 59:578 N '15; Excerpts. *Idiot Ity J 46:918*  
*O 30 '15; Iron Age 96:1059* N 4 '15  
 Chilled car wheels. *W. J. Keep.* *Foundry 43:*  
*469* N '15

Control of chill in cast iron, considering the elements effective in the manufacture of malleable castings and chilled car wheels.  
*G. M. Thrasher.* *II Am Inst Min 10 Jul 100:*  
*2129-38* O '15; Same. *Foundry 43:491-3* J '15;  
 Same. *Iron Tr R 67:1171-3* J 1 '15 '15  
 Mixture for chilled crusher rolls. *W. J. Keep.*  
*Foundry 43:187* My '15

Standardization of chilled iron crane wheels; abstracts. *F. K. Vint.* *diag Am Soc M E J*  
*37:147-61* Mr '15; *Iron Tr R 66:1083-7+* D  
 10 '14

Strong claims for chilled iron car wheels. *F. K. Vint.*  
*Ity Age 58:820* Ap 16 '15  
 Wreck due to a faulty car wheel. *II Iron Tr R*  
*67:937-40+* N 11 '15

**Chilliwack, B. C.****Sewerage**

Sewage disposal in Chilliwack. *B. P. Dunn.*  
*diag Munic J 38:687-9* My 20 '15

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Electrically operated chime outfits. *II Elec R & W*  
*Mech'n 66:701-2* Ap 10 '15

**Chimneys**

Bellor ratings and chimney sizes. *IC: R. Morco.*  
*Dom Eng 69:301-2* J 5 '14

Brick chimney which floats. *II Power 41:740*  
 Je 1 '15

Chimney in a cyclone. *II Munic Eng 49:82-3*  
 Ag '15

Chimney in modern home building. *A. Marple.*  
*II Bldg Age 37:40-1* F '15

Chimneys for oil- and coal-burning plants.  
*F. H. Rosencrantz.* *Power 41:637-8* My 11 '15

Comparison of chimney sizes. *J. C. Lathrop.*  
*Power 42:299* Ag 31 '15

Comparison of chimney sizes. *L. W. Cutler.*  
*Power 42:519-20* O 12 '15

Rolling a brick chimney. *G. A. Mead.* *II Eng*  
*N 73:400-1* F 25 '15

Height of chimneys for burning anthracite.  
*Power 42:618* O 12 '15

Proper sizes of chimney flues. *Dom Eng 72:*  
*172-3* Ag 7 '15

Raising a brick chimney. *II Power 41:374* Mr 16  
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Raising a 400-ton brick chimney. *II diag Eng*  
*N 73:1208* D 24 '14

Reinforced concrete as an emergency repair for an iron chimney. *II diag Eng & Contr 48:*  
*100-1* F 3 '15

Repairing a badly corroded iron chimney during operation. *II Eng N 73:221* F 4 '15

Smaller stacks and lightning. *II Eng & Min J*  
*98:1005-6* D 5 '14

Straightening a tall leaning factory chimney by a new method. *T. K. Clark.* *diag Eng*  
*N 73:206-7* F 11 '15; Same. *Power 41:408* Mr  
 23 '15; Same. *Eng & Min J 99:822* My 8 '15;  
 Same. *Ind Eng 15:66-7* Ag '15

Tall brick stacks repaired rapidly under difficulties. *II Eng Rec 72:26* J 13 '15

Three points in chimney design. *Eng N 74:*  
*77* J 18 '15

Trouble with a leaky chimney. *J. R. Bell.* *diag*  
*Bldg Age 37:53-4* Mr '15

Warm-air furnace design and installation.  
*diag Metal Work 84:149-50, 525-6, 575-6* J  
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See also Fireplaces; Heating; Ventilation

**Chimneys, Concrete**

Construction of concrete chimneys. *P. H. Wilson.*  
*II Bldg Age 37:71-2* Ja '15

Design, construction and cost of a 137-ft. reinforced concrete chimney at Coldwater, Mich.  
*K. B. Morton.* *Eng & Contr 44:111-13* Ag 11  
 '15

Effects of fumes from lignite coal and from wood on cement brick chimneys. *Concrete*  
*Cem 6:246-7* D '14

Power plant of Havana gas and electric corporation. *II Munic Eng 49:86* Ag '15; *Power*  
*41:166* F 2 '15

Reinforced concrete chimneys in Havana. *II Concrete*  
*Cem 6:281* F '15

Tearing down a 250-ft. reinforced-concrete chimney at Philadelphia. *II Eng N 73:78* Ja  
 14 '15

**Chimneys, Steel**

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*N 73:413-4* Mr 4 '15; Same. *Power 41:643-4*  
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Design and construction of a 400-foot steel stack at the United Verde copper co.'s plant, Clarkdale, Ariz. *L. W. Barker.* *II diag Eng*  
*& Contr 44:140-1* Ag 25 '15

Difficult smoke-stack job. *F. L. Johnson.* *II Power*  
*42:506-7* O 12 '15

Foundation bolts for steel chimneys. *II, D. Hearn.*  
*diag Power 42:476* O 4 '15; Same. *Eng & Min J*  
*100:718-19* O 30 '15

Methods and equipment used in wrecking a 101-ft. steel stack. *II Eng & Contr 44:305* O  
 20 '15

Reasons for corrosion of steel smokestacks and ways to prevent it. *R. L. E. Elkin.* *Elec W 66:*  
*1033* N 6 '15

**China**

American engineer in China. *W. H. Parsons.*  
*II map J Fr Inst 179:381-413* Ap '15; Abstract.  
*Eng M 48:430-1* Jo '15

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**Commerce**

China and Indo-China markets for American lumber. *F. H. Smith.* *U S Bur For & Dom*  
*Com 104:1-39* '15

Winning of the Orient. *IC: H. Foot.* *II Am Ind*  
*15:22-3* Ja '15

Woolen and worsted fabrics in China. *T. Sammons.*  
*Textile World 49:472-5* J '15

**Industries and resources**

Chinese cotton industry. *R. A. Morgan.* *Textile*  
*World 50:187-9* N '15

Chinese machine shop of today. *F. A. Foster.*  
*Iron Tr R 67:992-4* N 18 '15

Cotton manufacturing in China. *R. A. Morgan.*  
*II Textile World 49:412-13; 50:285-8* J, O '15

Mining conditions in China. *F. L. Garrison.*  
*Eng & Min J 100:26-8* J 3 '15

Mining in China. *Eng & Min J 100:408* N 18 '15

Opportunity for the engineer in China. *F. A. Foster.*  
*Am Soc M E J 37:646* N '15

Tariff in China (central station). *L. Schmidt-Harms.*  
*Elec W 66:128* J 17 '15

**Public works**

Flood relief in the Hwai river district of China. *map*  
*Engineer 120:331* O 8 '15

Report on flood prevention in China. *II Eng*  
*Rec 70:679-80* D 19 '14

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**China closets**

Details of a built-in china case. *W. H. Wilkin.*  
*diag Bldg Age 37:27-30* D '15

- Chinese wood oil**  
Constitution of Chinese wood oil varnishes. E. E. Ware and C. L. Schumann. *J Ind & Eng Chem* 7:571-3 J1 '15  
Quantitative method for the determination of the adulteration in Chinese wood oil. J. C. Brier. *J Ind & Eng Chem* 7:953-7 N '15
- Chloral**  
Action of chloral, bromal and benzaldehyde on the polycyclic hydrocarbons in the presence of aluminum chloride. G. B. Frankforter and W. Kritchevsky. *Am Chem Soc J* 37:385-92 F '15
- Chlorides**  
Chlorides in oil-field waters. C. W. Washburne. *Am Inst Min* 18 Jul 87:375-81 Mr '14; Discussion. 90:1374-5; 100:825-30 Jo '14, Ap '15
- Chloridizing ores.** See Hydrometallurgy
- Chlorination process**  
Chlorination of ores. *diag Met & Chem Eng* 13:505 Ag '15  
Refining gold by Miller's chlorine process; abstract. R. Pearson. *Met & Chem Eng* 13:508 Ag '15
- Chlorine**  
Chlorine gas on the battlefield. *Sci Am* 112:453 My '15 '15  
Electrolytic cell patents for the production of caustic soda and chlorine. *diag Met & Chem Eng* 13:815-16 N '15  
Electrolytic production of caustic and chlorine. *diag Met & Chem Eng* 13:506 Ag '15  
Ortho-tolidin test for free chlorine. W. F. Monfort. *Am Water Works Assn J* 1:734-6 D '14
- Chlorine, Liquid**  
Automatic liquid-chlorine water disinfecting plant at Stamford, Conn. J. A. Newlands. *Eng N* 73:1158-9 Jo '15 '15  
Bubbly creek filter plant adopts liquid chlorine treatment. C. A. Jennings. *Am Water Works Assn J* 2:401-3 Jo '15; Same. *Eng N* 73:555 Mr '15; Same. *Eng Rec* 71:338 Mr '15  
Efficiency of the liquid chlorine sterilization plant at Wakefield, Mass.; abstracts. 30: (3. Sherman. *Am Eng & Contr* 44:410 N 24 '15; Munie *J* 39:811 N 25 '15  
Liquid chlorine sterilization of the water supply of St. Catharines, Ontario. A. Milne. *II plan Eng & Contr* 43:188-90 Ar 3 '15  
Relative efficiency of liquid chlorine and hypochlorite of lime. F. E. Hale. *Eng & Contr* 43:173-4 Jo '15  
Use of liquid chlorine at Buffalo water-works intake. H. F. Wagner. *II plan Eng N* 73:856-7 My 6 '15  
Water borne typhoid in Sacramento, Cal.—interesting application of liquid chlorine. N. M. Williamson. *Eng & Contr* 44:314 O 20 '15
- Chloroacetates**  
Salts of the chloroacetic acids. W. C. Bateman and A. B. Hoel. *Am Chem Soc J* 36:2517-21 D '14  
Salts of the halogenoacetic acids. W. C. Bateman and A. B. Conrad. *Am Chem Soc J* 37:2553-60 N '15
- Chlorobenzoylacetic esters**  
*o*- and *p*-chlorobenzoylacetic esters and some of their derivatives. L. Thorp and M. L. Brunsell. *Am Chem Soc J* 37:1258-64 My '15
- Chlorophyll**  
Method of investigation. R. Willstätter. *Am Chem Soc J* 37:323-45 F '15
- Chloro-perlin**  
Production of chloro-perlin by the action of aqua regia on organic compounds. R. L. Datta and N. R. Chatterjee. *Am Chem Soc J* 37:567-9 Mr '15
- Christmas printing**  
Essentials to holiday printing. J. L. Frazier. *Inland Ptr* 54:369-71 D '14  
Examples of holiday printing. *II Inland Ptr* 54:368a-368h; 55:352a-352h D '14, D '15  
Reproduction of designs of Christmas greetings. J. L. Frazier. *Inland Ptr* 54:567-60 F '15
- Christmas trees, Municipal**  
Municipal Christmas tree for Dayton. *II Elec R & W Elec'n* 66:71 Ja 9 '15
- Christy, Samuel Benedict, 1853-1914**  
Sketch. R. W. Raymond. *por Eng & Min J* 98:1105-6 D 19 '14; Same. *Am Inst Min E* Bul 100:705-9 Ap '15
- Chromium**  
Effect of chromium and tungsten upon the hardening and tempering of high speed tool steel; abstract with discussion. C. A. Edwards and H. Kikkawa. *Iron Age* 96:1126-7 N 11 '15  
See also Nickel chromium
- Chromophotography.** See Color photography
- Chronophotography**  
Electric lighting for motion-picture studios. L. G. H. Smith. *Elec W* 65:1040-2 Ap 24 '15  
See also Moving pictures
- Chucks**  
Air-operated chucks and mandrels. E. F. Lako. *II diag Mach* 21:476-9 F '15  
Bicknell-Thomas tapping chuck. *II Mach* 22:159-60 O '15  
Boring and facing back end main rod brasses and driving boxes. M. Flannagan. *II diag Ry Age* (Mach ed) 89:239-40 My '15  
Chuck for finishing air pump packing rings. F. H. Stewart. *diag Ry Age* (Mach ed) 89:589 N '15  
Chuck for finishing boiler chuck bottles. W. W. Belfe. *II Ry Age* (Mach ed) 89:133 Mr '15  
Chucking ring and jaw extension for turning platons. H. Boren. *diag Mach* 21:1010 Ag '15  
Helipax roller bearing drill chuck. *II diag Mach* 21:428-9 Ja '15  
Horton combination geared scroll chucks. *II diag Mach* 21:329 D '14; *Iron Age* 94:1279 D 3 '14  
Improved Wahlstrom drill chucks. *diag Mach* 22:161 O '15  
Kipnis automatic drill and lathe chucks. *II diag Mach* 21:514-15 Jo '15  
Preventing lathe chucks from sticking. *diag Mach* 21:748-9 My '15  
Shoe and wedge chuck for milling machine table. R. M. Brown. *diag Ry Age* (Mach ed) 89:591 N '15  
Special chucks for air pump repairs. W. W. Belfe. *II Ry Age* (Mach ed) 89:183 Ap '15  
Wrenchless chucks. *II Metal Ind n s* 13:474 N '15
- Chucks, Magnetic**  
Blanchard magnetic chuck. *II diag Mach* 21:678-9 Ap '15  
Electrical appliances for workshops. *II Engin-eer* 119:670-2 Jo 11 '15  
Holding work on the magnetic chuck for milling. *II Mach* 22:50 S '15
- Church architecture**  
Books on colonial architecture. H. F. Bach. *ibidolog Arch Rec* 35:379-82 S '15  
Church of Abiah St. Nazaire. J. P. Alaux. *II Am Inst Arch J* 3:337-8 Ag '15  
Church towers, steeples, and spires of Sir Christopher Wren. H. L. Phillips. *II Brickl* 24:185-9, 228-33 Ag-8 '15  
Competition for a small brick church and parish house. *II Brickl* 21:148-52 Jo '15  
Emile Vandereuer. J. P. Alaux; L. Brachet; W. Cook. *II plans Am Inst Arch J* 3:292-9 J1 '15  
First church of Christ, Scientist, Los Angeles, Cal. *II diag plans Brickl* 24:pl 85-8 Jo '15  
First church of Christ, Scientist, Los Angeles: design and plan. *Arch & Bldg* 46:478a D '14  
First church of Christ, Scientist, Worcester, Mass. *II plans Brickl* 24:pl 89-90 Jo '15  
Frame church building at Bowen, Ill. *II diag plans Bldg Age* 37:31-4 J1 '15  
House of Hope Presbyterian church, St. Paul, Minn. *II plan Arch Rec* 37:410-24 My '15  
Modern brick-veneer frame church erected under three contracts. *II diag plan Bldg Age* 37:29-32 Mr '15  
Notable church edifice; the Val de Grace, in Paris, erected in 1638. *II Bldg Age* 37:62-4 My '15  
Ravenwood Presbyterian church, Chicago: views and plans. *Brickl* 24:pl 117-18 Ag '15  
Sheet metal for St. Ignatius church, San Francisco. W. A. Douglas. *II Metal Work* 83:102-3+ Ja 22 '15  
Thoughts on reading J. C. Cox's 'The English Parish church. *Am Inst Arch J* 3:339-45 Ag '15

**Church architecture—Continued**

Trinity Lutheran church, Akron, Ohio. I. T. Prary. II plans Arch Rec 37:363-67 Mr '15  
 Village church in England. J. Y. Dunlop. II Bldg Age 37:37-41 D '15  
 Webb Horton Memorial Presbyterian church, Middletown, N. Y. Brickb 24:pl 1-3 Ja '15  
*See also* Abbays; Chapels

**Church finance**

Church and business methods. J Account 19: 204-6 Ap '15

**Church lighting**

Church lighting. F. L. Godinez. II plan Arch & Bldg 47:321-5 Je '15

Lighting of a church in war time. II Illum Engr 8:478 N '15

**Churches**

*See also* Church architecture; Church lighting

**Heating and ventilation**

Church warmed by cast-iron sectional boiler. II plans Metal Work 83:98-100 Ja 8 '15

Features of economical church heating plant. II plans Metal Work 83:405-8 Mr 19 '15

Ventilating and cooling a church. plan Bldg Age 37:61-2 S '15

Ventilating and cooling church edifice. plan Metal Work 82:767-8 D 11 '14

Churn drills. *See* Rock drills

**Chutes**

Minimum slope for concrete chutes. W. H. Inley. Eng & Contr 44:400 N 27 '15

**Cider**

Apple syrup and concentrated cider. Sel Am S 80:78-9 J1 31 '15

**Cinchona alkaloids**

Nature of the catalysis in the conversion of the cinchona alkaloids into their toxins. H. C. Biddle. Am Chem Soc J 37:2088-2112 S '15

**Cinchotoxins**

Rate of conversion of cinchonidine into cinchotoxins. H. C. Biddle and R. H. Buttsch. Am Chem Soc J 37:3082-7 S '15

Rate of conversion of cinchonine into cinchotoxins. H. C. Biddle and O. L. Brauer. Am Chem Soc J 37:2065-82 S '15

**Cincinnati, Ohio****Bridges**

Construction features of the reinforced concrete cantilever bridge on Runnymede avenue. II Eng & Contr 43:312-13 Ap 7 '15

Design of the reinforced concrete cantilever bridge on Runnymede avenue. diags Eng & Contr 43:271-2 Mr 21 '15

Hopple street viaduct, Cincinnati. II diags Munic J 39:170-83 Ag 5 '15

**Fire department**

Cincinnati's fire department. II Munic J 39:283-7 Ag 26 '15

**Hospitals**

New General hospital, J. H. Schmidt. II plan Arch Rec 37:453-63 My '15

**Lighting**

Cincinnati franchise negotiations. Elec W 66: 105 J1 10 '15

**Rapid transit**

Rapid transit plans for Cincinnati. Elec Ry J 45:108 Ja 9 '15

**Sewerage**

Design of regulators and storm water overflows for sewers. M. J. Miner. diags Eng & Contr 42:166-7 Ag 12 '14

Method and cost of making a relocation survey of underground pipe lines. O. B. Carr. plans Eng & Contr 42:163-5 Ag 12 '14; Same cond. (Underground survey of Cincinnati). Eng Rec 71:36-40 Ja 9 '15

**Streets**

Cincinnati street cleaning. Munic J 38:38-9 Ja 14 '15

Sidewalk work in Cincinnati. D. L. Barr. Munic J 38:768-6 Je 8 '15

**Water supply**

Brass screen between sand and gravel eliminated in Cincinnati filter reconstruction. J. W. Illms. II Eng Rec 71:581-2 My 8 '15

Cincinnati builds high-pressure fire service system. J. A. Miller. II diags Eng Rec 71:590 My 8 '15

Cincinnati plant has eliminated waterborne typhoid. Eng Rec 72:336 S 11 '15

Cincinnati water works. J. W. Hill. diag Am Water Works Assn J 2:12-60 Mr '15

Design details of the Cincinnati high pressure fire system. diags Eng & Contr 43:529-32 Jo 16 '15

Failure of 60-in. water main at Cincinnati by longitudinal compression. J. W. Alvord. diags plan Eng & Contr 43:148-50 F 17 '15

Same cond. Eng Rec 71:588-9 My 8 '15; Excerpt. Eng N 73:407-8 F 25 '15

Operations of the Cincinnati water-filtration plant for 1914. J. W. Illms. II Eng N 73:854-6 My 6 '15

**Cinder concrete.** *See* Concrete, Cinder

**Cinders**

Cinder crushing and pulverizing mill. II Iron Age 96:242 J1 29 '15

Cinder removal from fine gases. C. H. Grady. diag Eng M 18:905-7 Mr '15

Performance of a cinder catcher. M. Van Valkenburgh and M. H. Isenberg. plan Power 40:818-19 1) 29 '14

**Cinematograph**

Current supply for motion picture machines. H. R. Johnson. II diags Gen Elec R 18:896-901 S '15

Motion-picture camera of radical design. II Sel Am 113:276 S 25 '15

*See also* Moving pictures

**Cinnabar.** *See* Mercury**Cinnamic aldehyde**

Researches on hydantoin; the condensation of cinnamic aldehyde with hydantoin. T. H. Johnson and E. Wrenshall. Am Chem Soc J 37:2133-44 S '15

**Ciphers**

Cipher codes. H. A. Darnell. Sel Am 113:181 Ag 28 '15

Cipher codes and their uses. E. C. Edwards. Sel Am 113:9 J1 3 '15

Cipher codes simplified. I. J. Paddock. Sel Am 113:271 S 25 '15

Enciphering and deciphering codes. F. Moorman. Sel Am 113:169 Ag 21 '15

Science of the cipher and an explanation of Bacon's indecipherable system. W. W. Brewton. Sel Am S 78:394-5 Jo 19 '15

Simple cipher code. H. S. Woodworth. Sel Am 113:291 1) 2 '15

**Circle building.** *See* New York (city). Architecture

**Circles**

Elementary perspective drawing. G. W. Kirtledge. Bldg Age 37:24-6 Ag '15

Table for spacing of circles. A. McAlpine. Foundry 43:280a J1 '15

**Circuit breakers, Electric.** *See* Electric circuit breakers

**Circular letters.** *See* Sales letters

**Cisterns**

Filter and rain-water cistern. diags Bldg Age 37:37-8 Ap '15; Same. Metal Work 84:485 1) 15 '15

New type of adjustable cistern form. Concrete Cem 6:107-8 F '15

**Cities**

*See also* City planning; Cleaning of cities; Garden cities; Model towns; Municipal government and other headings beginning Municipal; Parks; Street cleaning; Streets

**Citrus oils**

Determination of volatile esters in citrus oils and extracts. A. R. Albright and C. O. Young. Am Chem Soc J 37:3232-7 O '15

**City forester.** *See* Trees

**City government.** *See* Municipal government

**City manager plan.** *See* Municipal government--City manager plan

**City managers**

Training and advancement of city managers. K. Middle. Eng N 73:822-3 Ap 29 '15  
Training for city managers. H. M. Waite. Eng Rec 70:671-2 D 19 '14

See also Municipal government—City manager plan

**City managers' association**

First convention of city managers. Eng N 72:1189-90 D 10 '14

First convention, Springfield, O., Dec. 2, 3 and 4, 1914. Munic J 37:903 D 17 '14

First meeting, Dec. 2-4, at Springfield, Ohio. Eng Rec 70:sup 286 D 12 '14

2d annual convention, Dayton, O., Nov. 15-17. Munic J 39:823-4 N 25 '15

**City planning**

Alley problem. C. B. Ball. Eng N 74:871 N 4 '15

Architect's part in the world's work. F. L. Ackerman. Arch Rec 37:149-58 F '15

Aspects of city-planning administration in Europe. F. B. Williams. Am Inst Arch J 3:280-4 Je '15

Battle with chaos; the architectural side of city planning. F. L. Ackerman. Am Inst Arch J 3:444-7 O '15

Building-area, height and other limitations to use of private city property compiled. N. I. Lewis. Eng Rec 72:597-8 N 13 '15

Burnham as a pioneer in city planning. W. B. Parsons. Il plans Arch Rec 35:13-31 Ji '15

City plan for Detroit. G. I. Bennett. plans Am Inst Arch J 3:264-8 Je '15

City planning and civic-center work in Denver. H. Read. Il Am Inst Arch J 3:497-500 N '15

City planning—how it should be prosecuted. N. I. Lewis. Eng Rec 72:415-17 O 2 '15

City planning in Queens borough, New York. F. B. Tucker. map Eng N 74:638-41, 689-91 S 30-O 7 '15

City planning—what it is—four main features. N. I. Lewis. Eng Rec 72:382-4 S 25 '15

Commonsense and continuity of policy in town planning. R. C. Sturges. Am Inst Arch J 3:307-8 Ji '15

Comprehensive city planning in Philadelphia. R. A. Haldeman. Il Am Inst Arch J 3:265-60 Je '15

Concise city plan report for Bridgeport, Conn. Munic J 38:476 Ap 8 '15

Constitution and powers of a city-planning authority. R. H. Whitten. Am Inst Arch J 3:251-6 Je '15

Cooperation of the real-estate developer and town-planner in land subdivision. P. A. Harsch. Am Inst Arch J 3:308-10 Ji '15

Domestic town planning. T. Adams. Eng N 73:673-4 Mr 26 '15

Dunderbond in town planning. W. R. H. Willcox. Am Inst Arch J 3:172-4 Ap '15

Economic side of city planning. H. Wright. map Amn Eng Soc J 54:79-83 S '15

Ellen Wilson memorial homes to be erected at Washington, D. C. C. I. Ford. Il plans Am Inst Arch J 3:362-7 Ag '15

How apportion costs of municipal improvements? N. I. Lewis. Eng Rec 72:666-7 N 27 '15

How to go about city planning. W. D. Moody. Il Am Inst Arch J 3:303-8 S '15

Ideals in city planning. H. Emerson. Sci Am S 78:379-80 D 12 '14

McKim and the park commission. C. Brown. Il plan Arch Rec 38:681-9 Ji '15

Modern city planning and maintenance, by F. Koester. Review. Am Inst Arch J 3:83-5 F '15

Municipal control of street planning; abstracts of laws of cities, states, and Canadian provinces. A. L. Bostwick. Munic J 39:145-7 Ji 29 '15

National conference on city planning. Eng N 73:1190 Je 17 '15

Need of a city plan and of a city topographic map. J. W. Shirley. Eng N 73:281-2 S 11 '15; Same. Munic Eng 48:58-61 Ja '15

New York tax list: fluctuation of real estate values due to lack of regulation of the character of buildings. Am Inst Arch J 2:572-3 D '14

Progress of city planning in St. Louis. plans Am Inst Arch J 3:271 Je '15

Reasons for city topographic surveys. H. C. Mitchell. Eng N 73:280-1 F 11 '15

Reconstructed city. J. R. Smith. Eng & Contr 44:82-4 Ji 38 '15

Re-planning in Detroit: report to the Board of street railway commissions by Barclay, Parsons and Klapp. Il Am Inst Arch J 3:268-70 Je '15

Scheme to relieve congestion at busy street intersection. Il Eng N 71:875 N 4 '15

Significance of the English town-planning act of 1909. F. B. Williams. Il diag Am Inst Arch J 3:316-21 My '15

Six years of city planning in the United States. F. Shurtleff. Am Inst Arch J 3:240-51 Je '15

Street mapping. L. L. Tribus. Good Roads n s 10:235 O 23 '15

Tradition and city development. H. V. Lancaster. Am Inst Arch J 3:121-5 Mr '15

See also Building laws; Garden cities; Housing problem; Model towns; Municipal improvement

**Bibliography**

Bibliography of town planning. Am Inst Arch J 3:272-3 Je '15

**Study and teaching**

City-planning instruction in the public schools of Newark, New Jersey. J. C. Dana. Am Inst Arch J 3:447-8 O '15

City surveying. See Surveying; Topographical surveying

**Civil engineering**

Review of the year 1914. Sci Am 112:6 Ja 2 '15

Seventy years of civil engineering. Il Sci Am 112:537-9-1 Je 5 '15

What the Panama-Pacific exposition means to civil engineering and contracting. Eng Rec 71:619-20 My 15 '15

See also Aqueducts; Arches; Architecture; Blasting; Breakwaters; Bridges; Building; Canals; Cofferdams; Curves; Dams; Docks; Drainage; Dredging; Drilling and boring (earth and rocks); Earthwork; Embankments; Engineering; Excavation; Flood control; Foundations; Grading; Harbors; Highway engineering; Hydraulic engineering; Irrigation; Mining engineering; Municipal engineering; Piles and pile driving; Public works; Railroad engineering; Railroads—Construction; Reclamation of land; Rivers; Roads; Sanitary engineering; Shore protection; Steel construction; Straits and stressors; Streets; Subways; Surveying; Tunnels and tunneling; Walls; Water supply engineering

**Examinations**

California examination for construction engineering. Eng N 74:1081 D 2 '15

**Civil engineers**

British engineers advised as to uniform charges. Eng Rec 72:80 Ji 17 '15

Compensation of civil engineers. Eng N 73:34-7 Ja 7 '15

Compensation of engineers. Ry R 56:82 Ja 16 '15

Compensation of engineers varies widely—those in contracting fare best. Eng Rec 71:180-42 Ja 30 '15

More light on the compensation of engineers. Eng Rec 71:129 Ja 30 '15

National factory of safety, giving engineers instruction in military matters. W. R. King. Eng Rec 71:133 Ja 30 '15

See also Engineers

Civil engineers, American society of. See American society of civil engineers

**Civil service**

Federal law protecting government employees. R. D. Micou. Eng N 73:665 Ap 8 '15

**Examinations**

Choosing a first-class water works superintendent in Massachusetts. Eng & Contr 44:292-3 O 13 '15

Engineers and civil-service examinations in Philadelphia and elsewhere. A. M. Swanson. Eng N 73:277-9 F 11 '15

**Civil service—Examinations—Continued**

Questions asked in examination of applicants for position of water works superintendent at Kalamazoo, Mich. Eng & Contr 44:158-9 S 1 '15

**Clamping devices. See Machine tools—Fixtures****Clamps**

Adjustable foundry clamp. *II* Foundry 43:169 Ap '15  
Cleave clamps for stranded conductors. *II* Elec Ry J 45:805-6 Ap 24 '15  
Handy flask clamp. J. F. Buchanan. *II* diag Foundry 43:242-3 Jo '15  
New cast-steel clamp for guard-rails. *diag* Eng N 72:1161 D 10 '14  
Overhead straight line and angle protective crossing clamps. *diag* Elec Ry J 46:598-9 S 18 '15; *Elec* W 66:770 O 2 '15  
Pneumatic plate clamping clamp. *II* Iron Tr R 66:271 R 4 '15

**Class rooms**

Modern schoolhouse: the class room. W. H. Kilham. *plans* Brickb 24:3-8 Ja '15

**Classification**

Filing of technical literature. W. Arthur. *Elec Ry J* 45:511-12 Mr 13 '15  
Indexing and filing technical literature. A. R. Kanner. *Eng & Min J* 99:851-6 My 15 '15  
Proposed system of classifying and digesting the records of the society, with discussion. R. J. Trindle. *Am Soc M E J* 37:272-6 My '15  
Random reflections on classification of men and sciences. *Sci Am* 112:127 R 6 '15  
*See also* Joint committee on classification of technical literature

**Classification, Decimal**

Indexing of electrical engineering subjects. *Elec W* 65:1026-7, 1229 Ap 24, My 15 '15  
Subject index system of classification for filing data and plans. *Am Inst Arch J* 3:43-5 Ja '15  
Suggested extension of the Dewey decimal system of classification to gas engineering. D. S. Knauss. *Am Gas Inst Pro 9:pt 2, 1746-50; Discussion, 9:pt 2, 1750-7 '14*

**Classification of electromagnetic machinery.** F. Greedy. *diag* Am Inst 10 13 Pro 31:1399-1423 J 1 '15

**Classifiers**

Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. *II* *diag* Met & Chem Eng 13:55-9 Ja '15; *Same*. *J Ind & Eng Chem* 7:119-22 R '15

**Clay**

Afterberg plasticity method. C. S. Kinnison. *U S Bur Stand Tech Pa* 46:1-18 '15  
Burnt clay as concrete aggregate. *II* Eng & Contr 33:453 My 19 '15  
Lateral pressure and resistance of clay, and the supporting power of clay foundations. A. L. Bell. *Engineer* 119:124 Ja 29 '15  
Mineralogical constituents of clays. W. H. Fry. *Mon Geol* 10:292-5 Ap '15  
Plasticity of clay and its relation to mode of origin. N. B. Davis. *II* *Am Inst Min E Bul* 98:301-30 R '15  
Use of sodium salts in the purification of clays and in the coating process. A. V. Kleininger. *II* *diag* U S Bur Stand Tech Pa 51:1-40 '15  
White-burning clays of the southern Appalachian states. J. H. Watkins. *II* *map* Am Inst Min 10 Bul 98:391-411 R '15; *Abstract. Met & Chem Eng* 13:179-80 Mr '15  
*See also* Bricks

**Clay products**

Legal interpretation of the word "vitrified" as applied to ceramic products. E. Orton, Jr. *Eng Rec* 72:74 J 17 '15; *Eng N* 74:171 J 22 '15

*See also* Bricks; Pottery; Tiles

**Clayton act**

Clayton act and other things. W. H. Taft. *Am Ind* 15:34-7 Jo '15  
Clayton act and the exclusive agent. E. J. Buckley. *Metal Work* 82:835 D 25 '14  
Exclusive agencies and the Clayton act. *Elec R & W Elec'n* 66:527-9 Mr 20 '15  
Federal trade commission and the Clayton law. R. C. Butler and C. Lynde. *Ry R* 66:442-3 Mr 27 '15

Important decision on the Clayton act. *Sci Am* 113:103-1 Ag 21 '15  
Legality of exclusive agencies upheld. *Elec R & W Elec'n* 66:508 My 15 '15  
Supreme court and the Clayton bill. *Am Ind* 15:29-30 Ap '15

**Cleaning**

Cleaning machined parts. *II* Iron Age 96:627 S 16 '15  
Dry cleaning at home. *Sci Am* 113:441 N 20 '15  
Industrial uses of hydrofluoric acid. K. F. Stahl. *J Ind & Eng Chem* 7:56-8 Ja '15; *Same*. *Sci Am* S 79:140-1 R 27 '15  
Travelling mill for cleaning scrap. *II* plan Iron Age 96:14-15 J 1 '15  
*See also* Bleaching; Boiler cleaning; Car cleaning; Laundry; Street cleaning; Vacuum cleaning

**Cleaning of cities**

Annual municipal clean-up week in Philadelphia. *II* Eng N 73:620-1 Ap 1 '15  
Comprehensive clean-up campaign for Cincinnati. *Munic Eng* 48:303-4 My '15  
Three roofs furnish more dirt than 4½ miles of street. *II* Eng Rec 71:683 My 29 '15

**Cleaning of water mains. See Water pipes—Cleaning**

**Cleanliness**

*See also* Disinfection and disinfectants; Sanitation

**Clearing of land**

Costly highway clearing in dense forests. *II* Eng Rec 71:21 Ja 2 '15  
Portable stump boring machine. *II* Sci Am 112:202 R 27 '15  
Steam land-clearing machine. *II* Eng & Contr 42:166 Ag 12 '14  
*See also* Lumbering

**Cleburne, Texas****Sewerage**

Design feature of new sewerage system and sewage disposal works. H. E. McConnell. *diag* plans Eng & Contr 44:72-5 J 1 28 '15

**Cleveland, Ohio**

Cleveland and its industries. S. Mather. *Iron Tr R* 67:852 J- O 28 '15

**Bridges**

Details of main span of Detroit-Superior bridge at Cleveland. *diag* Eng Rec 70:640-1 D 12 '14  
Fast concreting on Brooklyn-Brighton viaduct. *II* *diag* Eng N 74:481 S 8 9 '15  
Methods and equipment used in constructing the superstructure of the Detroit-Superior high level bridge. *II* *diag* Eng & Contr 44:10-13 J 17 '15

**Division of purchases and supplies**

Purchasing and distributing supplies in Cleveland. A. R. Callow. *II* *Munic J* 39:391-4 S 9 '15

**Lighting**

Cleveland's municipal electric light plant. *II* *diag* Munic J 38:869-76 Jo 24 '15  
Design and operation of the Cleveland municipal electric light plant; abstracts with discussion. F. W. Ballard. *II* *diag* Am Soc M E J 37:104-11 R '15; *Power* 41:104-8 Ja 19 '15; *Abstract of discussion. Elec W* 64:1139-40 D 12 '14  
Engineering features of Cleveland public lighting plant. *II* *Elec W* 66:1619-22 Jo 19 '15

**Ordinances, etc.**

Heating ordinance of Cleveland. V. D. Allen. *Dom Eng* 70:44-6, 72-4, 155-6 Ja 9-16, 30 '15  
How Cleveland fixes sizes of courts and yards. *plan* Eng Rec 71:614 My 15 '15

**Railroads**

Railway terminal projects in Cleveland. *Ry R* 67:163 J 31 '15

**Stores**

Ames store. *II* *plans* Arch & Bldg 47:359-64 O '15

**Streets**

Street repair in Cleveland, Ohio; with cost tables. P. J. Masterson and others. *II* *Munic Eng* 49:174-8 N '15

**Cleveland, Ohio—Continued****Water supply**

Cleveland west side water-supply tunnel. *Il* dings plan Eng N 73:4-8 Ja 7 '15

**Wharves**

Ninth street pier in Lake Erie at Cleveland, Ohio. *Il* dings Eng N 74:258-60 Ag 5 '15

Cleveland, Cincinnati, Chicago & St. Louis railway  
Annual report. *Ry* Age 58:769-70 Ap 2 '15

**Cleveland engineering society**

Engineer and publicity, with special reference to the publicity work of the Cleveland engineering society; abstract. *C. E. Drayor. Eng & Contr* 42:574-5 D 23 '14; Abstract with discussion. *Am Soc M E J* 37:88-92 Jc '15

**Climate**

Effect of climate on location of manufacturing plants. *W. M. Booth. Sci Am S* 79:219 Ap 3 '15

**Clinkers**

Causes and prevention of clinker. *L. Rankin. Power* 42:303-4 Ag 31 '15

Clinkering of coal. *L. S. Marks. dings Am Soc M E J* 37:205-8 Ap '15; Same. *Power* 40:932-4 D 29 '14; Discussion. *Am Soc M E J* 37:208-14 Ap '15

Clinkering of coal. *O. W. Palmenberg. Colliery* 35:201 Ja '15  
Formation of clinker in coal. *S. U. Tuspian. Elec W* 85:1184-5 My 8 '15

See also Cement clinker

**Clocks**

Measurements for the household. *Il U S Bur Stand Chre* 55:126-35 '15

**Closed shops. See Open and closed shops****Cloth-sample books**

Outerwear of letterpress: the cloth-sample book industry. *G. Sherman. Inland Tr* 54:626-30 Jc '15

**Cloth testing. See Textile industry and fabrics—Cloth testing****Cloth windows**

Hygienic home: facts about ventilation and fresh air. *J. B. Todd. Sci Am S* 79:74 Ja 30 '15

**Clothing**

Clothing a winter army. *Sci Am* 112:215 J Mr 6 '15

See also Cloth-sample books; Coats; Footwear; Textile industry and fabrics; Underwear

**Clothing trade**

British India. *U S Sp Cons Rep* 72:259-65 '15

**Club rooms**

Rooms of the Bankers' club of America. *Il Arch & Bldg* 47:184-7 My '15

**Clubhouses**

Addition to the New York Harvard club. *J. T. Boyd, Jr. Il dings Arch Rec* 38:616-30 D '15

Boston city club, Somerset street, Boston, Mass.; views and plans. *Brickb* 24:77, pl 31-6 Mr '15

Church club house, St. Paul, Minn. *Il plans Brickb* 24:169-70 J1 '15

Country-club houses. *Il. D. Sherleyn. Il plans Arch Rec* 38:206-27 Ag '15

Folk's club house, Brooklyn, N. Y.; views and plans. *Brickb* 24:77, pl 37-9 Mr '15

Modern equipment in Detroit athletic club. *Il dings plan Metal Work* 84:37-9+, 73-6 J1 9-16 '15

Musicians' mutual relief society building, Boston. *Il plans Brickb* 24:126-6 My '15

New building for the T-square club, Philadelphia. *Pa. J. E. Harbison. Il plans Brickb* 24:253-4 O '15

Plumbing work in Harvard club of New York. *Il plan Metal Work* 84:605-7 N 12 '15

Three Arts club, Chicago; views and plans. *Brickb* 24:pl 112-14 Ag '15

Yale club's new house. *M. Wilcox. Il plans Arch Rec* 33:310-42 S '15

See also Club rooms

**Clutches**

Allowable friction values; effect of the speed of rotation on the operation of a friction clutch. *L. D. Pinkney. Mach* 21:793-4 Je '15

Combined friction and positive clutch. *Il Iron Age* 95:339 J1 28 '15

Design of friction clutches of the split-ring type. *W. J. Walker. diag Langloer* 118:610-11 D 25 '14

Lodge safety self-oiling clutch. *Il Textile World* 48:631-2 Mr '15; *Power* 41:801 Je 15 '15

Friction clutch for power hammers. *diag Iron Age* 95:1069 My 13 '15

Hilliard friction clutch. *Il diag Mach* 21:509 F '15

Hilliard rack-and-pinion clutch shifter. *Il Power* 41:706 My 25 '15

Ideal multi-cone clutch. *diag Power* 41:533 Ap 20 '15

Sheet working machinery clutch. *Il Iron Age* 95:183 Ja 21 '15

**Clyde river**

Improvement of the river Clyde and harbour of Glasgow, 1873-1914. *T. Mason. Engineer* 119:277 Mr 19 '15

**Coal**

Absorption of oxygen by coal. *W. F. Winnill. Colliery* 36:147-53 O '15

Anthracite and bituminous production, 1914. *Colliery* 35:381 F '15

Chart for coal purchasers. *W. V. Bowles. Power* 41:200 Jc 9 '15

Clinkering of coal. *L. S. Marks. dings Am Soc M E J* 37:205-8 Ap '15; Same. *Power* 40:932-4 D 29 '14; Discussion. *Am Soc M E J* 37:208-14 Ap '15

Coal and its economical use. *P. S. Thompson. Inst* 16 J 53:184-7 J1 15 '15; Abstract. *Elec W* 85:422-3 F 13 '15; Discussion. *Inst* 16 J 53:187-90 J1 15 '15

Coal shortage in Europe. *W. S. Illatt. Ry Age* 59:476 S 10 '15

Coals and coal fields of the Rocky mountain region. *Il. C. Hills. Colliery* 36:137-41 O '15

Caking of coal at low temperatures with special reference to the properties and composition of the products. *H. W. Parr and H. L. Glin. Il Ill U Engg Exp Sta Bul* 79:1-39 '15; Same cond. *Iron Tr R* 57:1027-34 N 25 '15

Composition and qualities of coal. *M. C. Jefferey. Il Neon Coal* 9:730-42 D '14

Cost factors in coal production. *W. H. Grady. dings Am Inst Min* 10 Ind 101:1035-64; Discussion. 101:1064-72; 103:1499-70 My, J1 '15

Finding the best coal. *C. W. Hubbard. Power* 41:206 Jc 9 '15

Fossil remains in coal. *Colliery* 35:521-2 My '15

Fossils of aid to the coal prospector. *Colliery* 35:499-500 Ap '15

Future methods of utilizing coal. *C. F. Hirschfeld. Power* 41:488-9 Ap 6 '15; Same. *Sci Am S* 80:568-9 J1 24 '15

Iron a factor in the world's progress. *J. Kirkbaine. J Fr Inst* 179:476-9 Ap '15; Excerpt. *Sci Am S* 80:328 N 20 '15

Kinds of coal produced in the United States. *Sci Am S* 80:322 J1 10 '15

New knowledge of coal. *Engg Rec* 71:159 F 6 '15

New knowledge of coal and its practical application. *Il. C. Porter. J Ind & Eng Chem* 7:239-42 Mr '15

Oklahoma smokeless coals. *M. F. Hackett. map Colliery* 35:593-5 Je '15

Origin, occurrences, and behavior of the gases usually found in mines. *F. Haas. Colliery* 35:375-9 F '15; Discussion. 35:436-41, 483-5, 501-2 Mr-Apr '15

Production of coal in the eight principal coal-mining countries in the world, from 1870 to 1913. *J. Kirkbaine. J Fr Inst* 179:487-8 Ap '15

Purchase of coal. *M. B. Smith. Power* 41:235-6 F 16 '15

Purchasing coal on heat unit basis. *Sci Am S* 79:403 Jc 26 '15

Rank of coal-producing states. *Sci Am S* 80:119 Ag 21 '15

Scheme for weighing coal during stoker trials. *diag Elec W* 86:695 S 25 '15

Simplified method of determining cost of coal per 1000 lb. of steam; chart. *W. H. Schott. Elec W* 86:754-6 O 2 '15; Same. *Power* 42:466-8 S 28 '15; Same. *Engg & Min J* 100:836-8 O 16 '15



**Coal—Continued**

Sulphur in coal. Elec W 65:350-1 F 6 '15  
 Unit coal. Sci Am S 79:397 Je 19 '15  
 Use of coal and production of cheap power.  
 W. F. Reid. Power 42:318 Ag 31 '15  
 Use of thickness contours in the valuation of  
 lenticular coal beds. G. S. Rogers and C. E.  
 Leshner. maps Econ Geol 9:707-29 D '14  
 Variation in coal constituents for similar R.T.U.  
 values. H. D. Jackson. Power 41:441 Mr 30  
 '15  
 Waste in the selection and purchase of coal.  
 G. B. Gould. Eng M 49:850-61 S '15  
 Why do you wet coal on the forge? L. K.  
 Hirschberg. Colliery 35:414 Mr '15  
 Wood and coal as fuel for steam boilers. L. B.  
 Reynolds. tables Sibley J 30:14-20 O '15  
*See also* Briquets; Clinkers; Coal ashes;  
 Coal handling; Coal lands; Coal mines and  
 mining; Coal-tar colors; Coal-tar products;  
 and other headings beginning Coal; Coalings;  
 Coning stations; Coke; Fuel economy; Gas;  
 Lignite

**Analysis**

Analysis of coal with phenol as a solvent.  
 S. W. Parr and H. P. Hladky. II diag. Ill U  
 Eng Exp Sta Bul 76:1-41 '14; Abstract. Am  
 Soc M 10 J 37:128-9 F '15  
 Comparison of various modifications of the  
 Kjeldahl method with the Dumas method  
 of determining nitrogen in coal. A. C. Field-  
 ner and C. A. Taylor. J Ind & Eng Chem 7:  
 106-12 F '15; Same. U S Bur Mines Tech Pa  
 64:1-22 '15  
 Phenol for coal analysis. Sci Am S 79:339 My  
 29 '15  
 Sampling and analysis of coal. A. C. Fieldner.  
 diag. U S Bur Mines Tech Pa 76:1-58 '14  
*See also* Coal sampling

**Clinkers***See* Clinkers**Specifications**

Outline specification of coal. M. B. Smith.  
 Power 42:770 N 30 '15  
 Purchase of coal on specifications. Power 42:  
 47 J1 13 '15

**Testing***See* Coal testing**Transportation**

Anthracite coal rates reduced in Pennsylvania.  
 Ity Age 57:1195 D 25 '14  
 Decision on anthracite rates. Ity R 57:215,  
 250-3 Ag 14-21 '15  
 Decision on transportation of railroad fuel. Ity  
 R 57:269 Ag 28 '15  
 Hearings on western freight rate advances.  
 Ity Age 58:740-2 Ap 2 '15  
 Reductions ordered in rates on anthracite coal.  
 Ity Age 59:313-18 Ag 20 '15  
 Too much prosecution of the anthracite rail-  
 roads. Ity R 58:18-19 Ja 2 '15

**Coal, Pulverized**

Anaconda coal-pulverizing plant. M. P. Math-  
 ewson. II plan Eng & Min J 100:45-8 J1 10 '15  
 British Portland cement making machinery.  
 II diag. Engineer 120:102-5 J1 30 '15  
 Coal-dust fired reverberatory at Washoe re-  
 duction works. L. V. Bender. Am Inst Min E  
 Bul 97:73-81 Ja '15; Abstract. Am Soc M 10 J  
 37:188-9 Mr '15; Abstract. Met & Chem Eng  
 13:184 Mr '15  
 Coal-dust fired reverberatory furnaces; discus-  
 sion of the papers of D. H. Brown, L. V. Ben-  
 der and R. E. H. Pomeroy. Am Inst Min E  
 Bul 101:1174-86 My '15  
 Coal-dust fired reverberatory furnaces of Can-  
 nadian copper co. D. H. Brown. diag. Am  
 Inst Min E Bul 97:49-60 Ja '15; Same cond.  
 Met & Chem Eng 13:182-4 Mr '15; Abstract.  
 Am Soc M 10 J 37:187 Mr '15  
 Comparative furnace efficiency. L. J. Welt-  
 laner. Met & Chem Eng 13:357-61 Ja '15  
 Comparison of the economy of powdered coal,  
 oil and water gas for heating furnaces. C. F.  
 Herington. Eng N 72:1155-8 D 10 '14  
 Feeding reverberatory furnaces along the side  
 walls. D. H. Brown. Eng & Min J 99:412-13  
 F 27 '15

Firing with coal dust. E. B. Wilson. Col-  
 liery 36:125-7 O '15  
 Modern plant for rolling iron: St. Louis screw  
 co. II C. Estop. II diag. plans Iron Tr R  
 57:82-9+ J1 8 '15  
 New iron mill equipped to assure low costs.  
 C. J. Abell. II diag. plan Iron Age 96:71-7  
 J1 8 '15  
 New system for burning powdered coal in  
 metallurgical furnaces. C. F. Herington. II  
 plans Eng N 73:1028-30 My 27 '15  
 Powdered coal. W. L. Robinson. Ity Age 58:  
 1055-6 My 21 '15; Summary, with discussion.  
 Ity R 56:696-7 My 22 '15  
 Powdered coal as central-station fuel. Elec R  
 & W Elec N 67:115-16, 193 J1 17, 31 '15  
 Powdered coal for heating furnaces. C. F.  
 Herington. II plan Iron Age 94:1045-8 N 5  
 '14; Abstract. Ind Eng 14:472 D '14  
 Powdered coal for steam boilers. Elec Ity J  
 45:1014-15 My 29 '15  
 Powdered coal, its preparation and use in  
 locomotives and stationary boilers. W. L.  
 Robinson. Ity R 56:772-6 Je 5 '15; Abstracts.  
 Ity Age (Mech ed) 89:271-3 Je '15; Power 41:  
 793-4 Je 8 '15; Colliery 35:446-8 J1 '15; Eng  
 & Min J 100:19 J1 3 '15; Sci Am S 80:139  
 Ag 28 '15  
 Powdered coal plant at Anaconda. L. V.  
 Bender. II diag. Met & Chem Eng 13:333-5  
 My '15  
 Powdered coal preparation and firing in Ger-  
 many. II diag. Am Soc M 10 J 37:248-50 N  
 '15  
 Problems in burning powdered coal. A. S.  
 Mann. II diag. Gen Elec R 18:920-4, 959-65  
 S-O '15; Same. Iron Age 96:632-4 S 16 '15  
 Pulverized coal burning in the cement indus-  
 try. R. C. Carpenter. II diag. plan Am Soc  
 M 10 J 36:337-46 O '14; Abstract. Ind Eng  
 14:331-3 Ag '14; Abstract. Colliery 35:529-30  
 My '15  
 Pulverized coal for steam making. E. R. Low.  
 diag. Power 40:35-8 J1 7 '14; Same. Am Soc  
 M 10 J 36:346-52 O '14; Same cond. Ind Eng  
 11:333-6 Ag '14; Abstracts. Colliery 35:530-2  
 My '15; Heat & Ven 12:31 7 Ag '15  
 Pulverized fuel for locomotives. Ry Age 58:941-  
 3 Ap 30 '15; Same. Ity Age (Mech ed) 89:  
 213-15 My '15; Same cond. Eng M 40:440-1  
 Je '15  
 Raw coal in blast furnaces. Iron Age 96:525  
 S 2 '15  
 Steamships burn pulverized coal. Metal Work  
 81:137 O 1 '15  
 Storage of powdered coal. E. J. Kelly. Eng  
 & Min J 100:312-13 Ag 21 '15

**Coal ashes**

Feasibility of coal ash in mixtures of hydrogen  
 and water vapor. A. C. Fieldner and A. L.  
 Feldt. II diag. J Ind & Eng Chem 7:742-7  
 S '15  
 Feasibility of coal ash in various atmospheres.  
 A. C. Fieldner and A. L. Feldt. diag. J Ind  
 & Eng Chem 7:399-106, 471 81 My-Je '15  
 Loss of combustible in ashes. Power 42:683-4  
 N 16 '15  
 New method and furnace for the determina-  
 tion of the softening temperature of coal  
 ash under fuel-bed conditions. A. C. Field-  
 ner and A. L. Feldt. II diag. J Ind & Eng  
 Chem 7:820-25 O '15  
*See also* Clinkers

**Coal breakers**

Coal breaker and scraper. J. P. Conduff. II  
 diag. Power 42:502-3 O 12 '15  
 Rapid erection of steel coal breaker. C. H.  
 Phillips. II Eng N 74:1-2 J1 1 '15

**Coal companies**

United States mining statutes annotated;  
 Sherman antitrust act coal companies.  
 J. W. Thompson. U S Bur Mines Bul 94:  
 pt 2, 1235-6 '15

**Coal cutters**

Track work with center cutting machines. II  
 diag. Colliery 36:28-9 Ag '15

**Coal distillation**

Letter from Norton H. Humphrys, Salisbury,  
 England. Am Gas Light J 102:345-6 My 31 '15  
 Maximum contents of hydrocarbons in pro-  
 ducer gas; abstract. F. Hoffmann. Am Soc  
 M 10 J 37:603 O '15

**Coal distillation—Continued**

Mode of decomposition of coal by heat. H. C. Porter and G. B. Taylor. *diag* Am Gas Inst Pro 9:pt 1, 234-83; Discussion, 9:pt 1, 283-8 '14

**Bibliography**

Bibliography of the chemistry of gas manufacture. W. F. Rittman and M. C. Whitaker. U S Bur Mines Tech Pa 120:5-7 '15

**Coal docks.** See Coal handling

**Coal drying**

Centrifugal coal drier. II *diag* Iron Tr R 56: 673 Ap 1 '15

Drying of coal for briquetting. II *Eng M* 48: sup1-3 F '15

**Coal dust**

American coal-dust investigations. G. S. Rice. *Colliery* 36:39-42 Ag '15

Coal-dust explosion experiments. J. D. Morgan. *diag* *Colliery* 35:549-51 My '15

Field coal-dust explosion gallery. II *Colliery* 35:605 Jo '15

Humidity of mine air. R. Y. Williams. II map U S Bur Mines Bul 83:1-63 '14

See also Coal, Pulverized

**Coal dust as fuel.** See Coal, Pulverized

**Coal gas.** See Gas

**Coal handling**

Alternating-current coal holst. R. B. Brown. II Am Inst E E Pro 34:615-22 Ap '15; Abstract, with discussion. *Elec R & W Elec* 66:781-3 Ap 24 '15; Discussion, Am Inst E E Pro 31:2895-914 N '15

Big consumer's storage yard: handling large quantities of coal at the New York Edison co.'s plant at Shadyside, N. J. J. P. Springer. II *Colliery* 35:345-8 F '15

Bituminous coal storage. II *Colliery* 35:231-5 D '14

Car dumping machines on the Hocking Valley railway's coal dock, Toledo, Ohio. II *Ry R* 56:207 F 13 '15

Coal and ash handling at the gorge plant of the Northern Ohio traction & light co. A. I. Williams. II *diag* Power 43:398-400 S 21 '15

Coal handling at Panama. II plans Power 42: 106-10 J 27 '15; Abstract. *Eng M* 50:441-3 D '15

Coal loading plant at Workington harbour. II *diag* Engineer 120:16 J 2 '15

Coal pier with car-dumping machine at Sandusky. II *diag* Eng N 73:165-7 Mr 11 '15

Coal-weighing barrier. II Power 41:17 Ja 5 '15

Electrically operated coal plant. II *Elec W* 65: 994-5 Ap 17 '15

Electricity in a coal-handling plant. R. M. Tule. II *Elec R & W Elec* 65:1165-8 D 19 '14

Export coal terminal of the Southern railway at Charleston, S. C. II *Ry R* 57:620-1 N 13 '15; Iron Age 96:574-5 O 28 '15

Fuel stations; committee report. *diag* *Ry R* 56:679-82 My 22 '15; *Ry R* 58:1060-1 My 21 '15; *Ry R* (Mech ed) 89:275-7 Jo '15

Improved performance with old-type coaling facilities. J. S. Williams. *Ry R* (Mech ed) 89:66 F '15

Improvements in small coaling stations. II *diag* Eng N 74:300-1 Ag 12 '15

Italian machine for loading coal tenders. II *Sci Am* 113:225 S 11 '15

Large coal handling gantry crane. II *Iron Tr R* 57:442 S 2 '15

Mechanical handling of coal and ashes in the power plant. C. C. Brinley. II *diag* Eng M 49:872-87; 50:65-77 S-O '15

New coal dock for the Cincinnati, Hamilton & Dayton at Toledo. II plan *Ry R* 59:273-4 Ag 13 '15; Same. *Ry R* 57:230-9 Ag 21 '15; Same cond. *Eng Rec* 72:163-4 Ag 7 '15

New Southern railway coaling pier at Charleston, S. C. II plan Int Marine Eng 20:151-3 Ap '15

Pennsylvania coal dock at Sandusky. II plan *Ry R* 57:1189-91 D 25 '14

Rapid car dumping plant, Toledo, O. II *Iron Age* 95:1388 Jo 24 '15

Rapid coal handling plant on the lakes. II Int Marine Eng 20:358 Ag '15

River terminal at East St. Louis, Ill. *diag* Eng N 74:543 S 16 '15

Telphers expedite coal movement at German plant. A. Gradenwitz. II *Eng Rec* 71:615 My 15 '15

Toledo coal dock built in record time. II plan *Eng N* 74:520-2 S 9 '15

White power-hoisting coal body. II *Automobile* 32:433 Mr 4 '15

See also Coaling; Coaling stations

**Coal lands**

Abstracts of current decisions on mines and mining, October, 1914, to April, 1915. J. W. Thompson. U S Bur Mines Bul 101:8-9 '15

Appraisal of coal land for taxation. H. M. Chance. Am Inst Min 19 Bul 91:1461-6 J 1 '14; Discussion, 100:868-70 Ap '15

Coal fields of South America. W. G. Burroughs. *Colliery* 36:30-1, 72-3, 153-5 Ag-O '15

Principle of coal evaluation. R. W. Coulthard. *Colliery* 36:22 Ag '15

Russia—its future as a coal and iron producer. C. R. King. map *Eng M* 48:481-92 Ja '15

Status of Alaska coal land leasing. *Eng & Min* J 99:350 My 15 '15

United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 1, 724-828; pt 2, 887-97 '15

Valuation of coal lands. F. C. Welles. *Colliery* 36:161-2 O '15

Valuation of coal lands. W. M. Fohl. *Colliery* 36:264-6 S '15

See also Coal mines and mining

**Coal meters**

Recording power plant operations. J. C. Smallwood. II *diag* Eng M 49:818-36 S '15

**Coal miners**

Investments in iron river district with particular reference to welfare work. C. A. Tupper. II *Iron Tr R* 56:769-64-1 Ap '15

Methods of adjusting mining rates. L. Huck. *Colliery* 35:349-53 F '15

Miners' minimum wage in Yorkshire. *Engineer* 119:66-7 Ja 15 '15

Miners' wage crisis. *Engineer* 119:284-5 Mr 10 '15

Miners' wages and hours; the West Yorkshire mining dispute. *Engineer* 119:140 F 5 '15

Plan for the West Virginia miner. M. W. Jordan. II *Colliery* 35:310-12 Ja '15

Welfare work at Glen White. C. D. Evans. II *Colliery* 35:473-5 Ap '15

What the miners are aiming at—nationalization. *Engineer* 120:94 J 23 '15

**Coal mines and mining**

Archiving in collieries. R. C. Clark. *diag* *Colliery* 35:293-6 Ja '15

Boiler plant of the Bessemer coal and coke company; using as fuel a mixture of coal and slate. W. O. Rogers. II *diag* plan Power 41:798-801 Ja 15 '15

Carney-Cherokee coal co.'s stripping. W. S. Russell. *Colliery* 36:173-4 O '15

Central-station power in coal-mining operations. T. R. Hagg. II *diag* M 48:851-18 Mr '15

Coal mine engineer. C. O. Klepper. *Colliery* 36:93-5 S '15

Coal mined by machines. M. W. Parker. *Sci Am* 8 79:305 Jo 19 '15

Coal mining problem; hydraulic stowage. *Engineer* 118:526 D 4 '14

Coal stripping in Illinois. II *Colliery* 36:69-72 S '15

Coal stripping in Kansas. W. Z. Price. II *Colliery* 36:285-8 Ja '15

Colliery repair shops. W. Z. Price. II *Colliery* 35:269-71 D '14

Competition and legal restraint of cooperation in coal mining. *Ry R* 56:478-9 Ap 3 '15

Cost factors in coal production. W. H. Grady. *diag* Am Inst Min 19 Bul 101:1025-64; Discussion, 101:1004-72; 103:1469-70 My, J 1 '15

Dewatering an anthracite mine. W. Z. Price. II *diag* *Colliery* 36:87-90 S '15

Efficiency in coal mining. C. S. Brackett. *Colliery* 35:588-92 Jo '15

Gas and oil wells through coal seams; discussion. Am Inst Min 19 Bul 100:846-58 Ap '15

Labor factor in bituminous mines. C. S. Brackett. *Colliery* 36:99-100 S '15

Lucarno power plant and tipple of the Rockwell & Pittsburgh coal and iron co. C. M. Young. II *Colliery* 36:1-6 Ag '15

**Coal mines and mining—Continued**

Mining institute meetings: winter meetings of the Illinois coal mining institute, the Coal mining institute of America, and the Kentucky mining institute. *Colliery* 35:325-8 Ja '15

Mining steep thick coal beds. W. G. Whildin. *diags* *Colliery* 35:354-64 F '15

Practical economy at coal mines. L. G. Hauger. *Colliery* 35:128-31 O '15

Questions selected from those asked at an examination for mine foreman, held in Price, Utah, September 15 and 16, 1914. *Colliery* 35:217-20, 276-9, 338-41 N '14-Ja '15

Rock work in coal mines. II *diags* *Colliery* 35:237-40 D '14

Stresses in the mine roof. R. D. Hall. *diags* *Am Inst Min E Bul* 105:2013-21 S '15

Stripping at the National colliery. II *Colliery* 35:598-9 Je '15

Surveying in anthracite mines. W. Z. Price. *diag* *Colliery* 35:461-4, 541-3 Ap-May '15

Theory of the arch in mining. R. S. Randolph. *Colliery* 35:127-9 Mr '15

*See also* Coal dust; Coal handling; Coal lands; Coal mining machinery; Mining engineering

**Accidents and explosions**

American coal-dust investigations. G. S. Rice. *Colliery* 35:39-42 Ag '15

Coal-dust explosion experiments. J. D. Morgan. *diag* *Colliery* 35:549-51 My '15

Coal-mine explosions caused by gas or dust. H. N. Ravenson. *Am Inst Min E Bul* 94:2637-50 O '14; Discussion, 100:879-85 Ap '15

Dangerous months in coal mining. *Colliery* 35:309 Ja '15

Drowning at Higashimikono colliery. S. Meguro. *diags* *Colliery* 35:19 Ag '15

Fatalities at coal mines during 1914. A. H. Fay. *Colliery* 35:604-5 Je '15

Fatalities at coal mines during 1911 compared with previous years. *Sci Am* 112:228 Mr '15

Fatalities in coal mines caused by explosives: table. A. H. Fay. *U S Bur Mines Tech Pa* 107:14 '15

Hillcrest, Alberta, explosion: a description of the mine, the ventilation, and general conditions. *Colliery* 35:318-20 Ja '15

Hogo coal mine, in Japan. S. Meguro. II map *Colliery* 35:576-80, 637-43 Je-Jl '15

Layland, W. Va., mine disaster. II *Colliery* 35:556-8 My '15

Limits of mining under heavy wash. D. Bunting. *diags* plan *Am Inst Min E Bul* 97:1-21 Ja '15; Discussion, 101:1187-9 My '15

Methods of preventing and limiting explosions in coal mines. G. S. Rice and L. M. Jones. *diags* pls *U S Bur Mines Tech Pa* 84:1-42 '15

Occurrence of explosive gases in coal mines. N. H. Burton. *bullet* *diags* maps *U S Bur Mines Bul* 72:1-237 '15

Roof falls in the northern anthracite fields. *Colliery* 35:386 F '15

Roynton mine explosion. II plan *Colliery* 35:263-8 D '14

Safe use of electricity in coal mining. W. M. Thornton. *Sci Am S* 78:398-400 D '15 '14

Tripp shaft disaster. W. Z. Price. *diag* *Colliery* 35:321-2 Ja '15

*See also* Coal mines and mining—Safety measures; Mine rescue work

**Explosives**

Permissible explosives tested prior to March 1, 1915. S. P. Howell. *U S Bur Mines Tech Pa* 100:1-14 '15

Tolerances in tests of permissible explosives. *J Ind & Eng Chem* 7:716-17 Ag '15

**Government ownership**

Government ownership and the miner. M. L. Bailey. *Colliery* 35:490-1 Ap '15

**Safety measures**

Electric shot firing in Kansas. C. B. Carpenter. *diag* *Colliery* 35:596-8 Ja '15

Firedamp detector; abstracts. H. R. Webster. *diag* *Eng M* 49:108-9 Ap '15; *Colliery* 35:67-8 S '15

Gas-detecting apparatus. W. G. McMillan. *Colliery* 35:411 Jo '15

Humidity of mine air. R. Y. Williams. II map *U S Bur Mines Bul* 83:1-63 '14

Method of preventing and limiting explosions in coal mines. G. S. Rice and L. M. Jones. *diags* pls *U S Bur Mines Tech Pa* 84:1-42 '15

Protective system for coal mines. N. D. Levin. II *Colliery* 35:135-6 O '15

Safety inspection system of the Susquehanna coal co. G. C. Curtis. *Colliery* 35:607-8 Je '15

Safety methods and organization of United States coal & coke co. H. N. Ravenson. *Am Inst Min E Bul* 98:413-30 F '15; Discussion, 101:1075-95 My '15

Shot firing in coal mines by electric circuit from the surface. G. S. Rice and H. H. Clark. *Am Inst Min E Bul* 94:2563-71 O '11; Discussion, 100:885-91 Ap '15

What a miner can do to prevent explosions of gas and of coal dust. G. S. Rice. *U S Bur Mines Tech* 21:1-21 '15

*See also* Mining engineering—Safety measures

**Alaska**

Chignik bay, Alaska, coal fields. W. R. Crane. II map *Colliery* 35:457-61 Ap '15

**British Columbia**

Comox mines, Vancouver Island, B. C. Ia. Notland. II map *Colliery* 35:59-63 S '15

**Canada**

Coal resources of Canada. F. D. Adams. *Colliery* 35:627-9 Je '15

**Illinois**

Early days of coal mining in Illinois. W. Rutledge. *diag* *Colliery* 35:112-4 O '15

**Japan**

Hogo coal mine, in Japan. S. Meguro. II map *Colliery* 35:576-80, 637-43 Je-Jl '15

**Kentucky**

Advantages of the western Kentucky field. F. V. Ruckman. *Colliery* 35:188-9 Ap '15

Harlan coal field in southeastern Kentucky. R. J. Sampson. *Colliery* 35:371-4 F '15

Harlan, Ky., coal field. W. R. Peck. *Colliery* 35:649-50 Jl '15

Plant of Yellow creek coal co. R. J. Sampson. *Colliery* 35:498-9 Ap '15

**Montana**

Hull mountain coal field, Montana. J. P. Rowe and R. Wilson. maps *Colliery* 35:7-11, 74-9 Ag-S '15

**Nova Scotia**

Sydney, Cape Breton, coal field; climatic conditions necessitating storage; large operations extending under the sea. J. F. Springer. II *Colliery* 35:641-5 Ja '15

**Oklahoma**

Oklahoma smokeless coals. G. F. Hackett. map *Colliery* 35:592-5 Ja '15

**Pennsylvania**

Mining in the broad top coal field. W. Z. Price. II map *Colliery* 35:517-21 My '15

New Lawrence colliery. L. C. Madelon. II *Colliery* 35:82-3 S '15

Workable coal seams of western Pennsylvania. *Colliery* 35:297 Ja '15

**South America**

Coal fields of South America. W. G. Burroughs. map *Colliery* 35:552-3, 643-4 My, Jl '15

**Spitzbergen**

Arctic coal; preliminary success of American interests in Spitzbergen. M. R. Barr. *Eng M* 49:760-1 Ag '15

Coal mining in Spitzbergen. *Eng & Min J* 100:672-3 O 23 '15

Heat from Our Lady of the snow; coal-mining in the Arctic circle. H. J. Shapstone. II *Sci Am* 112:180 F 13 '15

**Coal mines and mining—Continued****West Virginia**

- Coal mining in West Virginia. J. E. Coleman. *Il Sibley J* 30:21-7 O '15  
 E. B. White coal company mines. G. D. Evans. *Il Colliery* 35:401-7 Mr '15  
 Operations in the New River field. W. Z. Price. *Il Colliery* 35:533-7+ My '15

**Coal mines and mining, Submarine**

- Sydney, Cape Breton, coal field; climatic conditions necessitating storage; large operations extending under the sea. J. F. Springer. *Il Colliery* 35:581-5 Je '15

**Coal mining institute of America**

- Annual winter meeting in Pittsburg, Dec. 8-9. *Colliery* 35:326-8 Ja '15

**Coal mining machinery**

- Biggest steam shovel; excavator built for stripping coal beds. *diag Mng M* 50:452-3 D '15

- Coal mined by machines. M. W. Parker. *Sci Am S* 79:395 Je 19 '15

- Improved coal mining machinery. *Il Colliery* 35:452-4 Mr '15

*See also* Coal cutters

**Coal piers. See Coal handling****Coal preparation**

- Benefits to be derived from standard practice in the preparation of coal. H. C. Adams. *Ity R* 57:41-2 Ji 10 '15

- Plant of Yellow creek coal co. R. J. Sampson. *Colliery* 35:498-9 Ap '15

- Standardization of coal preparation; abstracts. H. C. Adams. *Ity Age* 58:1060 My 21 '15; *Ity R* 58:698 My 22 '15

*See also* Coal drying; Coal washing

**Coal sampling**

- Method of obtaining representative coal samples. *diag Mlee W* 66:306 Ag 14 '15

- Principles of coal sampling. S. W. Parr. *Sci Am S* 80:15-16 Ji 3 '15

- Proposed tentative method for the sampling of coal. *Power* 42:34-5 Ji 6 '15

- Sampling and analysis of coal. A. C. Fieldner. *diag U S Bur Mines Tech I'a* 76:1-58 '14

**Coal storage**

- Big consumer's storage yard; handling large quantities of coal at the New York Edison co.'s plant at Shadyside, N. J. J. F. Springer. *Il Colliery* 35:345-8 I' '15

- Bituminous coal storage. *Il Colliery* 35:231-5, 298-302 I' '14-Ja '15

- Cleveland adopts steel coal and sand storage bins. *Il diag Mlee Ity J* 46:1001-2 N 13 '15

- Coal handling at Panama. *Il plans Power* 42:106-10 Ji 27 '15; *Abstract. Eng M* 50:441-3 I' '15

- Land storage of bituminous coal; the ever present factor of spontaneous combustion; abstract. C. R. Crapo. *Am Soc M* 13 J 37: 612 O '15

- Railway coal-storage plants. *plans Eng N* 74:592-3 S 23 '15

- Storage of coal. *Ity Age* 58:1116-19 My 28 '15

- Storage of coal. *Ity R* 56:701 My 22 '15

- Storage of coal; abstract. C. G. Bell. *Mlee W* 66:76-6 Ji 10 '15

- Storage of powdered coal. *Ity J. Kelly. Eng & Min J* 100:312-13 Ag 21 '15

- Sydney, Cape Breton, coal field; climate conditions necessitating storage; large operations extending under the sea. J. F. Springer. *Il Colliery* 35:581-2 Je '15

*See also* Coal tanks

**Coal tanks**

- Concrete lining for steel bunkers. *Il Power* 40: 812 D 8 '14

**Coal tar**

- Coal gas residuals. F. H. Wagner. *diag Am Gas Light J* 101:306 N 16 '14; *Same. Met & Chem Eng* 12:697-8 N '14; *Same. Sci Am S* 80:316-17 N 13 '15

- Coking of coal at low temperatures with special reference to the properties and composition of the products. S. W. Parr and H. L. Olin. *Il U Eng Exp Sta Bul* 79:18-23, 28, 36-9 '15; *Same cond. Iron Tr R* 57:1031-2 N 25 '15

- Fractional collection of crude tar. G. T. Purves. *diag Am Gas Light J* 102:387-90 Je 21 '15

- New knowledge of coal tar. H. C. Porter. *Sci Am S* 79:222-3 Ap 3 '15

- New method of utilizing lignite coal tar; abstract. V. Schon. *Am Soc M E J* 37:403-4 Ji '15

- Use of coal tar in flotation. W. A. Mueller. *Eng & Min J* 100:591-3 O 9 '15

*See also* Tar

**Coal-tar colors**

- Aniline dye situation. *Met & Chem Eng* 13: 829-30 N 15 '15

- Aniline dye situation. I. F. Stone. *Met & Chem Eng* 13:863-71 O 1 '15

- Coal-tar dyes and the Paige bill; compulsory working of patents. B. C. Hesse. *J Ind & Eng Chem* 7:963-74; *Discussion. H. E. Stonebraker; I. C. Hesse. J* 9:74-8 N '15

- Development of coal-tar dyestuffs. *Textile World* 49:362-4 Je '15

- Dyestuff famine. T. H. Norton. *Il Sci Am* 113: 400+ N 6 '15

- Dyestuff situation and its lesson. A. D. Little. *J Ind & Eng Chem* 7:237-9 Mr '15; *Same. Sci Am S* 79:278-9 My 1 '15

- Government co-operation with our industries. *Sci Am* 112:99 Ja 30 '15

- Identifying amino-di-acids. B. C. Hesse. *J Ind & Eng Chem* 7:674-5 Ag '15

- Industry of the coal-tar dyes. B. C. Hesse. *map J Ind & Eng Chem* 6:1013-27 D '14; *Excerpts. Am Gas Light J* 101:401-6 D 28 '14

- Let us forget! Who killed Cock Robin? Tho U. S. tariff-history of coal-tar dyes. B. C. Hesse. *J Ind & Eng Chem* 7:694-709 Ag '15

- Manufacture of aniline colors in the United States. I. F. Stone. *Textile World* 49:238-9 My '15

- Manufacture of coal-tar crudes. *Sci Am S* 80: 261 O 23 '15

- Recommendations of the New York section of the American chemical society on the enlargement of the coal tar chemical industry in the United States. *J Ind & Eng Chem* 6: 972-5 D '14

- Two problems of the coal tar dye industry. B. C. Hesse. *Textile World* 49:225-8 My '15

- Who killed Cock Robin? notes on the tariff history of coal-tar dyes. *Sci Am S* 80:135 Ag 28 '15

- Why America does not manufacture aniline dyes. H. McCormack. *Inland Tr* 54:545-7 Ja '15

*See also* Dye industry; Dyes and dyeing; Petroleum

**Coal-tar products**

- Carbolic acid and cresote; with chart. H. H. Alcock. *Am Gas Light J* 103:58-9 Ji 26 '15

- Coal-tar chemical industry in Germany and America. *Sci Am S* 80:240 O 9 '15

- Coal-tar products and the possibility of increasing their manufacture in the United States. I. C. Porter. *U S Bur Mines Tech I'a* 80:1-19 '15; *Excerpt. Eng M* 49:428 Je '15

- Explosives from tar. *Am Gas Light J* 102:279, 282 My 3 '15

- Explosives from tar products. V. B. Lewis. *Am Gas Light J* 102:197 Mr 29 '15

- Extraction of carbolic acid from oils of the distillation of coal tar. W. Mason. *diag Met & Chem Eng* 13:293-4 My '15

- Outline of the coal tar chemical industry. *Sci Am S* 80:147 S 4 '15

- Position of the American tar distiller. *Sci Am S* 80:187 Ag 7 '15

- Possibilities for coal tar industry. R. V. Sawhill. *Iron Tr R* 56:4-6 Ja 7 '15

- Present production of crude tar products. *Sci Am S* 80:286 Ag 7 '15

- Status of the chemical industries in the United States at the end of 1915. I. F. Stone. *J Ind & Eng Chem* 7:991-3 N '15; *Same. Sci Am S* 80:286-7 O 30 '15

*See also* Benzol; Coal-tar colors; Gas; Toluol

**Coal testing**

- Factors governing the combustion of coal in boiler furnaces; a preliminary report. J. K. Clement. J. C. W. Frazer and C. E. Augustine. *Il diag U S Bur Mines Tech I'a* 63:1-41 '14; *Excerpts. Sci Am S* 79:359 Je 5 '15

**Coal testing—Continued**

- Fuel-supply contracts and the progress of more scientific methods of purchase and control in America and Europe. J. B. C. Kershaw. *Met & Chem Eng* 13:393-6 Je '15
- Fusibility of coal ash in various atmospheres. A. C. Fieldner and A. E. Hall. *diag* J Ind & Eng Chem 7:399-406 My '15
- Sub-bituminous coal and sawmill waste in producer plant. G. S. Wilson. *Int Power* 42:442-3 S 28 '15
- United States mining statutes annotated; coal testing acts. J. W. Thompson. *U S Bur Mines Bul* 94:pt 1, 826-8 '15
- See also* Coal—Analysis

**Coal trade**

- Central stations taking advantage of slump in coal market. *Elec R & W Elec'n* 66:109-10 Ja 16 '15
- Coal fields of South America. W. G. Burroughs. *map* *Colliery* 35:552-3, 643-4 My, JI 15
- Foreign markets for coal. *U S Sp Cons Rep* 60:1-24 '15
- Fuel conditions in South America. J. W. Hardy. *Ity Age* 58:1056-7 My 21 '15
- Production of coal. *Engineer* 120:370 O 15 '15
- United States coals available for export trade. V. H. Manning. *map* (*U S Bur Mines Bul* 76:1-14 '14)
- United States foreign coal trade: the production, the consumption, and export facilities of the different countries of the world. R. W. Parker. *Colliery* 35:486-8 Ap '15
- Wages and profits in the coal trade. *Engineer* 119:436-7 Ap 30 '15

**Coal washing**

- Automatic slate control. *diag* *Colliery* 35:260 D '14
- Coal washer efficiency. C. R. Delamater. *Colliery* 35:337 Ja '15
- Effect of washing Kansas coal. A. A. Potter. *Power* 40:901 D 22 '14
- English coal washing plant at Barugh. *diag* *Colliery* 35:252-4 D '14

**Coaling**

- De Mayo system for coaling ships. *Int Marine Eng* 30:122-4 Mr '15
- English ship-coaling machine. *diag* *Eng N* 74: 649 S 30 '15

**Coaling at sea**

- Coaling United States warships. *Int diag* *Sci Am* 8 79:276-7 My 1 '15
- Refueling warships at sea; abstract. S. Miller. *Int Marine Eng* 20:17-18 Ja '15

*See also* Coaling vessels

**Coaling stations**

- Cableway coaling station. *Int plans* *Ity Age* 58:330 F 19 '15
- Coaling and landing station on the Virginian railway at Mineo. P. F. Harrington. *Int diag* *Eng Rec* 71:22-3 Ja 2 '15
- Coaling stations for the economical handling of 25 to 50 tons per day. *Ity Age* 59:759 O 22 '15
- Concrete coaling station. L. & N. R. R. Lebanon Junction, Ky. *Int diag* *Ity* 59:586-7 Ap 17 '15
- Fire hazards at coaling stations. *Ity Age* (Mech ed) 89:592 N '15
- Fuel stations; committee report. *diag* *Ity* 11 58:679-82 My 22 '15; *Ity Age* 58:1060-1 My 21 '15; *Ity Age* (Mech ed) 89:275-7 Je '15
- Improvements in small coaling stations. *Int diag* *Eng N* 74:300-1 Ag 12 '15
- Large coaling stations on the Panama canal. *Int diag* *Eng N* 74:254-6 Ag 5 '15
- Locomotive coaling plant at Camden Town. *Int diag* *Engineer* 119:344 Ap 2 '15
- Locomotive coaling plants of the Roberts & Schaefer type. *Int Ity R* 56:863-4 My 15 '15
- New Southern railway coaling pier at Charleston, S. C. *Int plan* *Int Marine Eng* 20:161-3 Ap '15
- Railway coal-storage plants. *plans* *Eng N* 74: 592-3 S 23 '15
- Schrader shallow pit coaling station. *plan* *Ry R* 56:364-5 Mr 13 '15
- Shallow-pit coaling station. *plan* *Eng N* 74: 743 O 14 '15
- Snow coaling station with car unloader. *Int diag* *Ity R* 57:26-6 JI 3 '15

- Snow locomotive coaling station. *diag* *Ry R* 56:566-7 Ap 24 '15

**Coaling vessels**

- U. S. collier Jason as a Christmas ship. *Int Marine Eng* 20:32-3 Ja '15

- Coast and geodetic survey. *See* United States—Coast and geodetic survey

- Coast artillery. *See* Artillery

**Coast defense**

- Actual and theoretical ranges of the United States coast defense guns. *Sci Am* 112:472 My 23 '15
- Increasing the range of our coast defense guns. *Sci Am* 113:159 Ag 21 '15
- Lesson of the Queen Elizabeth. *Sci Am* 112: 263 Mr 20 '15
- See also* United States—Defenses

- Coast erosion. *See* Erosion

- Coast protection. *See* Shore protection

- Coasting. *See* Electric railroads—Coasting

**Coats**

- Knitting silk plated coats. *Textile World* 40: 361 Je '15
- Shaker coats for girls. *Int Textile World* 48:415-16 Ja '15

**Cobalt**

- Applications of metallic cobalt; experiments conducted with cobalt and copper alloys. D. B. Browne. *Metal Ind* n 8 12:509-10 D '14
- Chemical and mechanical relations of iron, cobalt and carbon. J. O. Arnold and A. A. Rend. *Iron Age* 95:953 Ap 29 '15
- Cobalt and nickel assay. S. Fischer, Jr. *Met & Chem Eng* 12:773-4 D '14
- Electro-plating with cobalt. C. H. Buchanan and T. Hadow. *Metal Ind* n 8 13:210-2 Je '15
- Electroplating with cobalt. H. T. Kalmus, C. H. Harper and W. L. Savell. *J Ind & Eng Chem* 7:379-90 My '15; *Excerpts* (Conclusions). *Met & Chem Eng* 13:328-9 My '15; *Elec R & W Elec'n* 66:873 My 8 '15; *Summary*. *Eng M* 40:422-3 Je '15
- Iron-cobalt alloy. F. G. C. and its magnetic properties. T. D. Yensen. *Int Gen Elec R* 18: 881-7 S '15
- Physical properties of the metal cobalt. H. T. Kalmus and C. Harper. *Int J Ind & Eng Chem* 7:6-17 Ja '15

**Cobalt steel**

- Material for accelerating machine tool speeds and output. *Sci Am* 8 79:370 Je 12 '15

- Code of principles. *See* American electric railway association

**Coffee**

- Detoxication of coffee. *Sci Am* 112:292 Mr 27 '15

**Coffee mills**

- Brass working ingenuity of the Arabs of the desert; a pocket coffee-mill. L. Lodian. *Int Metal Ind* n 8 13:108 Mr '15
- Electric coffee mill. *Int Elec W* 66:1219 N 27 '15

**Coffee plantations**

- Hydro-electric installation on a coffee plantation. J. H. Torrens. *Int Gen Elec R* 18:219-22 Mr '15; *Same cond*. *Eng M* 40:266-7 My '15

**Cofferdams**

- Concrete pile and cylinder foundations at Charleston. *Int diag* *Eng N* 74:226-9 N 11 '15
- Contract methods and equipment for a typical Ohio river dam. H. H. Shriver. *Int diag* *plan* *Eng N* 73:806-11 Ap 29 '15
- Notable step in the building of New York's great piers; cofferdamming the North river. R. G. Skerrett. *Int Sci Am* 113:100-1 Ag 21 '15
- Progress on 46th street pier coffer-dam. New York city. *Int Eng N* 73:908 My 6 '15
- Reconstruction of pier of Little Rock Junction bridge across the Arkansas river. C. B. Smith. *diag* *Eng & Contr* 44:124-5 Ag 18 '15
- River crossings on the Norman pipe line. B. C. Milen. *Int Munic J* 38:219-51 P 25 '15
- Unmanageable coffer-dam leak handled by freezing. *Int plan* *Eng N* 73:778-9 Ap 22 '15
- Wood cofferdams with bottoms sunk for bridge in swamp. C. E. Jones. *diag* *Eng Rec* 71 534-5 Ap 24 '15
- Work to start in deep cofferdam for New York pier. *Int Rec* 71:664-5 My 22 '15
- See also* Bridges—Foundations and piers  
Piles and pile driving

Coffin, Howard Earle, 1873-  
Sketch, por Eng M 50:221 N '15

#### Cohoes Falls, New York

Central hydroelectric plant of 50,000 horse-power replaces inefficient separate units at Cohoes. A. G. Hillberg, II diag maps long Rec 71:353-4, 395-8 Mr 20-27 '15

Hydro-electric development, W. O. Rogers, II plans Power 42:466-71 O 5 '15

Hydro-electric development of the Cohoes company at Cohoes, N. Y. B. R. Connell, II diag plans map Gen Elec R 18:340-52 My '15

Redevelopment of old canal power, II diag plan Eng N 73:456-9 Mr 4 '15

#### Coils

Choke coils and disconnecting switches, diag Elec Ry J 46:20 J1 3 '15

Coil-winding unit, G. P. Chubbuck, II Elec Ry J 45:1213 Je 26 '15

Differential method for the determination of losses in coils, A. Hund, diag Elec W 66:1300-1 My 22 '15

Hints on the impregnation of railway motor coils, II Elec Ry J 45:420 R 27 '15

Process of impregnating coils; and a large, modern impregnating plant, It. Rold, II Gen Elec R 18:48-51 Ja '15

Rewinding direct-current motors and generators, A. A. Fredericks, diag Power 42:76-8, 116-18, 148-50 J1 20-Ag 3 '15

#### Coils, Induction. See Induction coils

#### Colls, Reactance. See Reactance colls

#### Coke

Causes of coke troubles in the foundry, Iron Age 94:1348-9 D 10 '14

Coke as a fuel under boilers, (I. Wirthwein, Am Soc M 10 J 37:554-8 S '15

Coke as fuel under boilers; abstract, II. Markgraf, diag Am Soc M 10 J 37:600-10 O '15

Coke in gas producers, Iron Age 95:404 Ag 26 '15; Same, Am Gas Light J 103:186 S 20 '15

Coke production in 1914, Iron Tr R 67:964b-964c N 11 '15

Coke recovered from the cinder dump, W. J. Kepp, Iron Tr R 66:332-1 O 18 '15

Coking of coal at low temperatures with special reference to the properties and composition of the products, S. W. Parr and H. L. Olin, III U Eng Exp Sta Bul 79:1-39 '15

Same cond, Iron Tr R 67:1027-31 N 25 '15

Abstract, Met & Chem Eng 13:639 S 15 '15

Connellsville coke prices for fifteen years, Iron Age 95:14 Ja 7 '15

Conversion of non-coking fuels, Am Gas Light J 103:284 N 1 '15

Experience with a by-product coke oven plant, C. C. Boardman, II Am Gas Light J 103:289-94 My 10 '15

Fixed calorific standard - a new use for gas coke, N. L. Humphrys, Am Gas Light J 102:73-4 J 1 '15

Gas coke for large heating systems, II. Reiss, Metal Work 84:179 Ag 6 '15

How to burn coke, Am Gas Light J 102:173 Mr 15 '15

Improvement in by-product foundry coke, C. S. Lomax, Iron Age 95:1116-18 My 20 '15; Same, Iron Tr R 67:361-2 Ag 19 '15

Large installation of by-product coke ovens on Tyneside, II diag Engineer 119:486-8 My 14 '15

Making by-product coke, II. C. Kestep, II diag Iron Tr R 66:1171-8 J 1 24 '14

Metallic iron in coke samples, J. R. Campbell, Colliery 35:538-41 My '15

Republic company's by-product coke plant, II plan Iron Age 94:1433-8 J 1 24 '14

Standard specifications for the foundryman, Foundry 43:268, 260-1 J1 '15

Tall reinforced concrete coke house in Rotterdam, Holland, II Eng & Contr 44:229-30 S 22 '15

Wasteful coke production, Metal Work 84:282 Ag 27 '15

See also Coal; Coke oven gas; Coke ovens

Cost

By-product coke in New York, Colliery 35:485 Ap '15

#### Coke breeze

Coke-breeze briquettes; abstracts, K. T. Rehr, J Ind & Eng Chem 7:718 Ag '15; Am Gas Light J 103:134 Ag 30 '15

Use of coke breeze as concrete aggregate, W. M. Kinney; A. M. Wolf, Concrete Cem 7:115-16 S '15

#### Coke oven gas

By-product coke oven gas for Chattanooga, Munic Eng 48:186 F '15

Experience with a by-product coke oven plant, C. C. Boardman, II Am Gas Light J 102:289-94 My 10 '15

Municipality buys coke-oven gas, Am Gas Light J 101:413 D 28 '14

Utilization of waste heat for the generation of electrical energy, II. Hobson, diag Inst E E J 53:845-6 Jo 15 '15

Valuable products recovered from coke oven gases, II diag Sci Am 112:379-80 Ap 24 '15

#### Coke ovens

Application of by-product coke ovens to the gas industry, J. D. Forrest, Am Gas Light J 102:186-9 Mr 22 '15

Blast-furnace gas for coke ovens, O. Simmersbach, Ind Eng 15:39-30 Ja '15; Same, Iron Age 95:242-3 Ja 28 '15; Same, Am Gas Light J 102:135-4 Mr 1 '15

By-product ovens at Baltimore, Md, II Am Gas Light J 102:27-8 Ja 11 '15

Carbonization in bulk - Koppers' ovens, C. J. Hamsburg, II diag Am Gas Inst Pro 9:pt 1, 543-501; Discussion, 601-14 '14

Deterioration of fluechy goods in ovens and retorts, T. Holgate, Am Gas Light J 103:113-18 Ag 23 '15

Improvements in beehive ovens, II Colliery 35:247-8 D '14

Improvements in by-product foundry coke, C. S. Lomax, Iron Age 95:1116-18 My 20 '15; Same, Iron Tr R 67:361-2 Ag 19 '15

Large installation of by-product coke ovens on Tyneside, II diag Engineer 119:486-8 My 14 '15

Machine for cleaning ascension pipes, diag Am Gas Light J 103:51 J1 20 '15

Making by-product coke, II. C. Kestep, II diag Iron Tr R 66:1171-8 J 1 24 '14

Manufacture and tests of silica brick for the byproduct coke oven, K. Soaver, II Am Inst Min 10 Bul 105:1913-27 S '15; Same, Met & Chem Eng 13:861-6 N 15 '15

Mechanical doors vs. brick doors, on beehive coke ovens, Colliery 35:544-5 J1 '15

Model of a Koppers byproduct-coke plant at the United States national museum, Washington, D. C., II Eng & Min J 100:470 S 18 '15

Temperature conditions in coke ovens, O. Simmersbach, Am Gas Light J 103:51 Ja 25 '15

Valuable products recovered from coke oven gases, II Sci Am 112:379-80 Ap 24 '15

See also Coke oven gas

Accidents

Coke-oven accidents in the United States during the calendar years 1913 and 1914, A. H. Foy, U S Bur Mines Tech Pa 118:1-15 '15; Excerpt (Coke-oven accidents, 1913), Colliery 35:499 Mr '15

#### Cold light

Theory of cold light, W. L. Dunroft, Illum Eng Soc 10:289-95 no 4 '15; Same, Am Gas Light J 103:27-8 J1 12 '15; Same, Sci Am S 80:186-7 S 18 '15

#### Cold storage

Air ozonation, M. W. Franklin, J Ind & Eng Chem 6:853-4 O '14; Same, Am Soc Heat & V 10 20:350-4 '14

Excessively dry air in cold stores; abstract, W. D. Sawers, Am Soc M 10 J 37:52-3 Ja '15

Insulate huge concrete building for cold storage in Chicago, Eng Rec 72:662-3 N 27 '15

Pre-cooling of Canadian fruits, E. Smith, Am Soc M 10 J 37:100-1 Mr '15

See also Refrigeration and refrigerating machinery; Refrigerator cars

#### Collecting of accounts

Billing and collecting systems of small companies, Elec R & W Elec'n 67:184-6 J1 31 '15

Campaign to reduce delinquency: a five-year record by the American gas & electric company's properties, Elec W 65:998-9 Ap 17 '15

Results, collections and cash discounts, W. H. Vliet, Elec R & W Elec'n 67:106-7 J1 17 '15

Getting the money, G. M. Rittelmeyer, Metal Work 83:532-3 Ap 9 '15

**Collecting of accounts—Continued**

Office clerk problems—collections. C: Fried. Inland P'tr 56:186-8 N '15  
Should the salesman collect money? E. E. Whitehorse. Elec W 66:921-3 O 23 '15  
Three C's lead to business success. Metal Work 83:221-2 F 5 '15

**Collective bargaining. See Trade agreements****College architecture**

Gilman hall and Mechanical and electrical engineering building, Johns Hopkins university; views and plans. Brickb 24:pl 136-43 O '15

Gymnasium, Dartmouth college, Hanover, N. H.; designs. Brickb 24:pl 54-5 Ap '15  
New home of Johns Hopkins university. J: M. Hammond. II Arch Rec 37:481-92 Jo '15  
Washington university, St. Louis, Missouri. C. Study. II plan Arch Rec 37:64-75 Ja '15

*See also* Dental colleges

**College buildings**

Central generating system for University of Michigan. II plans Elec W 65:646-51 Mr 13 '15

End framing for armory at University of Illinois and some general features of this structure. II diag Eng & Contr 43:141-3 F 17 '15

*See also* College architecture; Dental colleges

**College education**

Education for railway work. S: O. Dunn. Rty Age 59:907-9 N 12 '15

**College students**

Enlarging the worth of the worker and the perspective of the employer. J. P. Channing. II Am Inst Min 39 Jul 99:529-34 Mr '15; Excerpt (Student engineers' teach workmen). Iron Age 56:554-5 Mr 11 '15; Discussion. Am Inst Min 39 Jul 101:1095-9 My '15  
Student life at Stevens. R. K. Homhan. Stevens Ind 32:67-63 Ja '15

**Colleges and universities**

*See also* Academic freedom; College buildings; College students; Engineering bureaus; Engineering colleges; Scholarships; also Throop college of technology

**Collisions at sea**

Stability of vessels as affected by damage due to collision. W: Gatewood. Int Marine Eng 20:156-8 Ap '15

Suction between passing ships. S. A. Itcove. diag Sci Am S 79:30-2, 46-8, 62-4 Ja 9-23 '15

*See also* Salvage

**Colloids**

Action of certain colloids on ions during electrolysis. A. Mutscheller. diag Met & Chem Eng 13:353-7 Jo '15

Coagulation of arsenious sulfide sol by electrolysis. J. Mukhopadhyaya. Am Chem Soc J 37:2024-31 S '15

Colloidal bituminous pavement. II Munic J 38:807-8 Jo 10 '15

Colloids in relation to manipulation of structural materials. C. Richardson. Munic Eng 48:360-2 Jo '15

Electric synthesis of colloids. J. Mukhopadhyaya. Am Chem Soc J 37:292-7 F '15

Interesting application of colloidal chemistry. D. T. Pierce. Met & Chem Eng 13:408-9 Jl '15

Neutralization of adsorbed ions. W. D. Bancroft. Met & Chem Eng 13:318-19 My '15

New method of preparation and some interesting transformations of colloidal manganese dioxide. E. J. Witzemann. Am Chem Soc J 37:1079-91 My '15

Relative migration velocities of the ions in complex electrolytes. A. Mutscheller. Met & Chem Eng 13:439-42 Jl '15

Theory of the perfect sheet asphalt surface. C. Richardson. J Ind & Eng Chem 7:463-5 Jo '15

*See also* Catalysis

**Colombia**

Taxes in Colombia. J. F. Dierolf. Eng & Min J 99:374 My 15 '15

**Industries and resources**

Nechi mines (Colombia) Ltd. Eng & Min J 99:244-5 Ja 30 '15

Pato property of Oroville dredging company. W. A. Prichard. Eng & Min J 99:231-4 Ja 30 '15

Placers of Antioquia, Colombia. R. W. Perry. II map Eng & Min J 100:585-9 O 9 '15

**Colonial architecture. See Architecture, Colonial****Color**

Artificial daylight. H. E. Ives. bibliog II J Fr Inst 177:471-99 My '14; Same. Sci Am S 78:396-8, 412-14 D 19-26 '14

Standardized colored fluids. H. V. Army and C. H. King. J Fr Inst 180:190-213 Ag '16

*See also* Color-ink colors; Colorimeters and colorimetry; Dyes and dyeing; Light; Light, Colored; Painting; Pigments; also headings beginning Color

**Color blindness**

Standard tests for color blindness. II Rty Age 58:222-3 F 5 '15

**Color filters. See Light filters****Color in architecture**

Color in architecture at the Panama-Pacific exposition. W: L. Wollott. II Arch Rec 37:437-44 My '15

Texture and color at the Panama-Pacific exposition. P. E. Denivelle. II Arch Rec 38:562-70 N '16

**Color matching**

Gaseous-conductor lamp for color matching; abstracts. D. M. Moore. diag Elec W 66:1160 N 20 '15; Elec R & W Elec'n 67:949 N 20 '15; Met & Chem Eng 13:885 D 1 '15

**Color music**

Art of mobile color. M. Luckiesh. II Sci Am S 79:408-9 Ja 28 '15

Color music; the color organ used in Scriabine's symphony Prometheus. H. C. Plummer. II Sci Am 112:343-4 Ap 10 '15

**Color photography**

Color photography. M. C. Rypinski. bibliog II Hum Eng Soc 9:579-92 no 7 '14; Same. Sci Am S 79:131-5 F 27 '15

Color sensitized plates. Sci Am S 79:240 Ap 10 '15

Development and recent advances of the technographic arts. L: B. Levy. II J Fr Inst 180:402-5 O '15

Important development in color photography; the kadiachrome process of color portraiture. Sci Am 112:341-4 Ap 10 '15

Photographs in natural colors. Sci Am 112:562-4 Jo 5 '15

Progress in color photography. Sci Am S 79:381 Jo 12 '15

*See also* Moving pictures, Colored

**Color printing**

Black and red. J. L. Frazier. Inland P'tr 54:371-2 D '14

Dividing the form for colors. J. L. Frazier. Inland P'tr 55:213-16 My '16

Outgrowths of letterpress: color cards for the paint and varnish trade. C: Sherman. II Inland P'tr 54:490-3 Ja '15

*See also* Color photography

**Color sense**

Method of correcting abnormal color vision and its application to the flicker photometer. H. E. Ives and E. P. Kingsbury. Hum Eng Soc 10:269-70 no 3 '15

**Color tests**

Color used in hydraulic tests of power plants. R. Taylor. diag Eng N 71:617-20 S 23 '15

**Colorado**

*See also* El Paso county, Colorado; Mines and mineral resources Colorado

**Industries and resources**

Bituminous shales of Colorado. C. R. DeBeque. II Eng & Min J 99:773-4 My 1 '15

**Colorado & Southern railway**

15th annual report. map Rty Age 57:1034-5, 1069-70 D 4 '14

Sixteenth annual report. map Rty Age 59:997-8, 1037-8 N 26 '15

**Colorado electric light, power & railway association**

13th annual convention, Glenwood Springs, Sept. 23. Elec W 66:792-3 O 9 '15

- Colorado fuel and iron company**  
Safety-first, first-aid and welfare work of the Colorado fuel and iron company. *Il Met & Chem Eng* 13:234-8 Ap '15
- Colorado river**  
Reservoir sites on the Colorado river. L. C. Hill. *map Eng Rec* 70:670-1 D 19 '14
- Colorado school of forestry**  
Courses of study. *Il Am For* 21:650-2 My '15
- Colored light.** See **Light, Colored**
- Colorimeters and colorimetry**  
Color of illuminants; with discussion. L. A. Jones. *diag Illum Eng Soc* 9:687-709 no 3 '14
- Colors**  
Analysis of chrome yellows and greens. A. Given. *J Ind & Eng Chem* 7:324 Ap '15  
*See also* Color, and references under that subject
- Columbia highway**  
Bridges and viaducts on the Multnomah county section of the Columbia river highway. *Il Good Roads* n s 10:243-7 N 6 '15  
Columbia highway in Oregon. *Il: L. Bowlby. Il Eng N* 73:62-4 Ja 14 '15  
Oregon's state highways. *Il. M. White. Il Munic J* 39:349-53 s 2 '15  
Reinforced concrete bridges along the Columbia highway in Oregon. K. P. Illmer. *Il diag Eng & Contr* 43:121-3 F 10 '15; *Same. Eng N* 72:1146-8 D 10 '14
- Columbia university**  
New advanced course in electrical engineering at Columbia university. W. I. Schleier. *Il Gen Elec R* 18:940-4 O '15  
**School of mines**  
Address at testimonial dinner. *Il: S. Munroe. Eng & Min J* 99:998-1001 Jo 5 '15
- Columbium**  
Notes on sodium columbates; the atomic weight of columbium. B. P. Smith and W. K. Van Hugen. *diag Am Chem Soc J* 37:1783-97 Ag '15
- Columbus, Georgia**  
**Water supply**  
Works for the improved water supply of Columbus. *plans Eng & Contr* 42:406-8 N 25 '14
- Columbus, Ohio**  
City and state power plants at Columbus. T. Wilson. *Il Power* 42:322-6 s 7 '15  
**Bridges**  
Design features of the Alger bridge, a 1,160-ft. reinforced concrete structure. *diag Eng & Contr* 44:206-9 s 15 '15  
**Floods**  
Engineering lessons from the Ohio floods. J. W. Alvord. *Il Boston Soc C* 12 J 1:85-108; *Discussion. 1:109-17 Mr '14*  
**Lighting**  
Decision for municipal light plant. *Power* 41:354-5 Mr 9 '15  
**Sewerage**  
Contract plans for sewer work at Columbus. *Eng N* 74:1034-5 N 25 '15  
Low river flow exacting for Columbus sewage works. *Eng Rec* 71:402 Ap 17 '15  
**Water supply**  
Columbus waterworks makes its own alumina revolutionary step in water purification practice. C. P. Hoover. *Il plan Eng Rec* 71:576-7 My 8 '15; *Same. Eng & Contr* 43:448-9 My 30 '15  
Water purification in Columbus. C. P. Hoover. *Munic Eng* 49:101-2 s 15
- Columbus railway and light co.**  
System of the Columbus railway and light co. *Il Power* 42:330-41 N 7 '15
- Column footings**  
Reinforced-concrete footings economically designed. N. M. Stineman. *Eng Rec* 72:340 s 4 '15  
Reinforced-concrete footings economically designed. W. A. Hoyt. *Eng Rec* 72:452 O 9 '15
- Reinforced-concrete footings of special construction. *diag Eng Rec* 72:355-6 S 13 '15
- Columns**  
Anchoring base plates for columns. D. N. Becker. *Eng Rec* 70:626 D 5 '14  
Anchoring base plates for columns. E. F. Allbright. *Eng Rec* 70:678 D 19 '14  
Column design for steel and wood construction. *Il Eng Rec* 71:233 F 20 '15  
Compression formulas for metal columns. *Eng Rec* 71:416-17 Ap 3 '15  
Curves for strength and deflection of very long columns. R. L. Robinson. *Eng N* 73:1108-9 Jo 10 '15  
Data on the strength and elastic properties of concrete-filled pipe columns. F. W. Swain and A. P. Holmes. *Eng & Contr* 44:184-5 S 8 '15  
Making square-paneled porch columns. *Il Bldg Age* 37:41 O '15  
Nomographic solutions for formulas of various types. R. C. Strachan. *Eng Rec* 71:807-9 Jo 26 '15  
Waste of metal in mill-building columns. C. L. Christensen. *Eng N* 73:590-1 Mr 25 '15  
*See also* Architecture; Poles; also Perry memorial
- Columns, Concrete**  
American concrete institute's tests on concrete columns. *Eng N* 73:524-7 Mr 18 '15  
Column forms hold 30 feet of wet concrete. P. A. McGandy. *Il diag Eng Rec* 71:470 Ap 10 '15  
Concrete column tests disclose effects of longitudinal and spiral reinforcement. *diag Eng Rec* 71:537-9 Ap 24 '15  
Concrete columns plain, rodged and hooped. R. Godfrey. *Eng Rec* 71:339-40 Mr 13 '15  
Economy in the design of reinforced concrete columns. P. J. Waldram. *Engineer* 120:22-30, 52-4 J 9-16 '15  
Field methods in concrete construction—column forms. J. Cochran. *diag Concrete Cem* 6:187-9 Ap '15  
New steel and concrete structure to furnish nearly sixteen acres of floor space; Bingham warehouse in Cleveland. *diag Eng Rec* 72:357 s 18 '15  
Reinforced concrete column formulae. C. Gayler, H. C. Toensfeldt, and G. W. Martin. *Amn Eng Soc J* 54:94-9 F 15; *Discussion. 54:150-8 Ap '15*  
Reinforcing concrete columns to carry additional stories. P. E. Prufert. *Il diag Eng N* 74:410-11 Ag 26 '15  
*See also* Poles, Concrete
- Columns, Steel**  
Results of recent tests of steel columns presented and discussed. *Eng Rec* 71:549-50 My 1 '15  
Steel column tests. *Eng Rec* 71:574 My 8 '15  
Strength of columns sought by full-size tests. *Eng Rec* 71:136 Ja 30 '15  
Tests of structural columns; record of work done at Bureau of standards. *Il diag Iron Tr* 15:567-9 J Mr 18 '15
- Combustion**  
Calculating dry flue-gas loss. C. W. Hubbard. *Power* 42:746-8 N 30 '15  
Combustion calorimetry and the heats of combustion of cane sugar, benzoic acid, and naphthalene. H. C. Dickinson. *hbillog U S Bur Stand Bul* 11:189-257 Mr 1 '15  
Combustion in locomotive fireboxes. J. P. Neff; J. T. Anthony. *diag Ry Age* 58:55-7 Ja 8 '15; *Same cond. Ry Age* (Mech ed) 89:10-11 Ja '15  
Combustion of coal in domestic heaters. R. W. Tavenport. *Metal Work* 82:328-9 Jo 25 '15  
Factors governing the combustion of coal in boiler furnaces; a preliminary report. J. K. Clement, J. C. W. Frazer and C. E. Augustine. *Il diag U S Bur Minn Tech* 13:631-41 '14; *Excerpt. Sci Am* 8:79:359 Jo 5 '15  
Flame and combustion. W. A. Bone. *Engineer* 120:857 O 15 '15  
Heats of combustion of aromatic hydrocarbons and hexamethylene. T. W. Richards and F. Barry. *Il Am Chem Soc J* 37:993-1020 My '15  
How much CO<sub>2</sub> to expect with various kinds of fuel. V. J. Azbe. *Power* 42:712-14 N 23 '15



**Combustion—Continued**

Notes on fans. A. A. Potter and S. L. Simmering. *Power* 41:818 *Je* 15 '15  
 Rapid organic combustions. M. Reimer. *Am Chem Soc J* 37:1636-8 *Je* '15  
 Relation of factors influencing combustion. C. W. Hubbard. *Power* 42:313-14 *Ag* 31 '15  
*See also* Fuel; Mechanical draft; Smoke

**Combustion, Spontaneous.** *See* Spontaneous combustion

**Combustion, Surface**

Design of surface combustion appliances. C. E. Lucke. *diag*s *Sch Mines Q* 36:95-123, 333-48 *Ja-Apr* '15; *Abstract. Met & Chem Eng* 13:729 *O* 15 '15  
 Surface combustion appliances. *Il Mach* 21: 768-9 *My* '15

**Comfort stations.** *See* Public comfort stations

**Commerce**

Mainstreams of seaborne commerce; map. *Eng & Min J* 99:141 *Ja* 16 '15

*See also* Accounting; Advertising; Banks and banking; Business; Business depression; Competition; Credit; Export trade; Government regulation of industry; International law; Interstate commerce; Interstate commerce commission; Manufactures; Monopolies; Partnership; Railroads; Rivers; Salesmen and salesmanship; Shipping; Tariff; Trusts, Industrial; Waterways; also names of countries, subhead Commerce, also European war—Commercial and financial aspects

**Commercial associations**

Commercial organizations in France. A. J. Wolfe. *U S Bur For & Com* 98:1-75 '15  
*See also* American international corporation; Chambers of commerce

**Commercial correspondence**

Supervision of postage stamps. *Horselows Ago* 35:262 *P* 24 '15  
*See also* Sales letters

**Commercial crises.** *See* Panics**Commercial law**

Anti-dumping legislation in Canada, South Africa, and Australia. *Textile World* 50:176-9 *N* '15

Australia anti-dumping law. *Iron Ago* 96:887 *O* 14 '15

Commercial laws of England, Scotland, Germany and France. A. J. Wolfe and E. M. Borchard. *U S Bur For & Com* 97:1-106 '15

*See also* Arbitration, Industrial; Contracts; Landlord and tenant; Negotiable instruments; Partnership; Property; Public service corporations; Sales; Trusts, Industrial

**Commercial paper.** *See* Negotiable instruments

**Commission on industrial relations.** *See* United States—Commission on industrial relations

**Commissions**

Commission plan for control of public works. *Eng N* 73:1186-8 *Ja* 17 '15  
 Limitations of government by commissions. *Ry Ago* 58:220 *F* 5 '15

**Community courts.** *See* Apartment houses

**Commutation (electricity)**

Commutation at overloads; abstract. M. Walker. *diag*s *Elec W* 65:819-20 *O* 9 '15  
 Criteria for the quality of commutation; examination of those proposed by Arnold and Robert J. F. H. Douglas. *Elec W* 65:601-2 *Mr* 6 '15  
 Factors affecting commutation. A. H. Brame. *diag*s *Power* 41:836-8 *Je* 22 '15

**Commutators**

Cleaning commutators. *diag* *Elec R & W Elec'n* 67:760, 899 *O* 23, *N* 13 '15  
 Emory around a dynamo. B. J. Oppenheim. *Power* 41:275-6 *P* 23 '15  
 Emory around a dynamo. W. Weaver. *Power* 40:855 *D* 15 '14  
 Filling holes in commutator. L. L. Pollard. *diag*s *Power* 41:690 *My* 13 '15  
 Gas heater for commutators. R. H. Parsons. *diag*s *Elec Ry J* 46:280-1 *Ag* 14 '15  
 Graphite brushes. *Colliery* 36:167-8 *O* '15  
 High mica commutator trouble. *Automobile* 32:1078 *Je* 17 '15

Los Angeles commutator slotter. E. L. Stephens. *Il Elec Ry J* 46:321-2 *Ag* 21 '15

**Physical limitations in D-C. commutating machinery.** B. G. Lamme. *Am Inst E E Pro* 34:1659-1614 *Ag* '15

Polyphase commutator machines and their application. N. Shuttlesworth. *Inst E E J* 53:439-57; *Discussion*. 53:457-66, 805-8 *Mr* 15, *Je* 1 '15

Schweitzer multiplex brush for commutators and collector rings. *Il Elec R & W Elec'n* 67:382 *Ag* 28 '15

Self-lubricating brush substitute. P. Justus. *diag*s *Power* 42:519 *O* 13 '15

Slotting commutators in the motor shell. J. G. Koppel. *diag* *Elec Ry J* 45:847 *My* 1 '15

Troubles encountered in the operation of carbon brushes in direct-current generators and motors. E. H. Martindale. *Il Am Inst E E Pro* 34:373-84 *Mr* '15; Same cond. *Power* 41:558-9 *Ap* 20 '15; Same cond. *Engineer* 119:468-9 *My* 7 '15; Same cond. (Causes of poor commutation and remedies) *Elec W* 65:863-4 *Ap* 3 '15; *Discussion*. *Am Inst E E Pro* 34:2966-74 *D* '15

Turning commutators in the power house. H. L. Loucks. *diag*s *Ry Ago* (Mech ed) 89: 470 *N* '15

What commutator appearance indicates. V. A. Clarke. *Power* 42:514-15 *O* 12 '15

What the operator should know about slotted commutators. *Elec W* 65:756 *O* 2 '15

*See also* Dynamos; Electric motors

**Company stores.** *See* Cooperation

**Compass**

Compass surveying. R. Bowen. *Colliery* 35: 417-18 *Mr* '15

*See also* Gyro-compass

**Compass, Prismatic**

Prismatic compass. *Il diag Sci Am S* 79:356 *Je* 5 '15

**Compensators.** *See* Electric transformers; Phase advancers

**Competition**

Game of killing off your competitor. J. C. Morrison. *Inland Ptr* 51:510-1 *Ja* '15

*See also* Monopolies; Trusts, Industrial

**Competition, Unfair**

First indication of what the courts will consider unfair competition under recent laws. E. J. Buckley. *Elec R & W Elec'n* 67:296 *Ag* 14 '15

French law on unfair competition. D. C. Poole, Jr. *Textile World* 49:643-4 *N* '15

Law as to unfair competition and imitation of labels and dress of goods. *Dom Eng* 73: 177 *N* 6 '15

**Composing machines.** *See* Typesetting machines

**Composing sticks**

History of composing-sticks. W. Sells. *Il Inland Ptr* 54:239-40 *Mr* '15

**Compound words**

Careless punctuation. W. P. Root. *Inland Ptr* 54:636-8 *P* '15

Compounds and use of the hyphen. F. H. Teall. *Inland Ptr* 55:243-4 *Ja* '15

Further elements in the use of hyphens. W. H. Teall. *Inland Ptr* 55:963-4 *Ag* '15

Go-as-you-please English. F. H. Teall. *Inland Ptr* 55:82 *Ap* '15

Use of the hyphen. F. H. Teall. *Inland Ptr* 54: 347-50 *D* '14

**Compressed air**

Air cooling plant, New York Central R. R., Mott Haven yard, New York. M. Purcell and M. F. Cannon. *Il plans Ry R* 56:703-5 *My* 22 '15

Bihn-Jones automatic air device for raising or handling large quantities of liquids. *diag*s *Met & Chem Eng* 13:876-7 *N* 15 '15

Caulking lead joints with compressed air at Waltham, Mass. *Eng & Contr* 42:290-1 *N* 23 '14

Compressed air as source of power; advantages of pneumatic power tools. C. O. Phelps. *Metal Work* 82:822-4 *D* 25 '14

Compressed air moulding machine. *Il diag Engineer* 119:189-90 *F* 19 '15

Compressor plant and pipe line arrangements for Sandy Ridge tunnel lining; plan. *Ry R* 57:331 *S* 11 '15

**Compressed air—Continued**

- Fighting the sea with compressed air. R. G. Skerrett. *Il Sci Am* 112:97 Ja 30 '15
- Floating a stranded ship on air; refloating the steamship Zeeland. R. G. Skerrett. *Il Sci Am* 112:84 Ja 23 '15
- How compressed air saved the steamship Floriston. R. G. Skerrett. *Il diag Int Marine Eng* 20:270-1 Je '15
- Moisture in yard testing plants. *Ry Age (Mech ed)* 89:395-6 Je '15
- Pneumatic track tamping. *Il Eng Rec* 70:689 D 26 '14
- Records of operation in handling concrete with compressed air. *Il diag Concrete Cem* 5:260-3 D '14
- Refloating the steamship Zeeland by compressed air. R. G. Skerrett. *Int Marine Eng* 20:87-8 F '15
- Return-pipe compressed-air practice. F. Richards. *Power* 41:224-5 F 16 '15
- Tunnel lining by compressed air. *Il Ry Age* 57:1143-4 D 18 '14
- Using compressed air to clean sand out of driven wells at Detroit. *Il Eng & Contr* 44:386 N 17 '15
- See also* Air compressors; Air lifts; Pneumatic tools; Pneumatic tubes; Vacuum cleaning

**Cost**

- Cost of compressed air. T. F. Crawford. *Ry Age (Mech ed)* 89:364-5 J1 '15

**Compressed air meters**

- Automatic air meter for foundries. *Il Foundry* 43:168 Ap '15; *Ry Age* 58:465 Mr 12 '15; *Iron Age* 95:737 Ap 1 '15; *Eng & Min J* 99:1077-8 Ja 19 '15
- Compressed-air meter. *Il Eng & Min J* 98:1100-1 D 19 '14
- Meter for measuring rate of flow of compressed air. *Il Sci Am* 113:364 (-) 23 '15

**Compressibility**

- Compressibilities of mercury, copper, lead, molybdenum, tantalum, tungsten and silver bromide. T. W. Richards and R. P. Bartlett. *diag Am Chem Soc J* 37:470-81 Mr '15
- Concerning the compressibilities of the elements, and their relations to other properties. T. W. Richards. *Am Chem Soc J* 37:1043-56 J1 '15
- Present aspect of the hypothesis of compressible atoms. T. W. Richards. *Biblic Am Chem Soc J* 36:2417-39 D '14

*See also* Elasticity**Compressing machines**

- Hydraulic ring compressing machine. *Il Iron Age* 94:1443 D 24 '14

**Compressors.** *See* Air compressors; Ammonia compressors**Compulsory education**

- Pennsylvania's new compulsory continuation schools. H. M. Miles. *Am Ind* 16:28-9 N '15

**Computing machines.** *See* Calculating machines**Comstock lode**

- Comstock lode in 1914. *Eng & Min J* 99:155-6 Ja 16 '15
- Men and machinery of the Comstock—pioneer hoisting works. C. W. Dickie. *Il Eng & Min J* 98:1130-4 D 26 '14
- Men and machinery of the Comstock—the combination shaft. C. W. Dickie. *Il Eng & Min J* 98:990-4 D 5 '14

**Concentrating tables**

- Development of ore concentration. II: A. Marvin. *Il Eng M* 40:222-5 My '15
- Development of the Butchart riffle system at Morenci. D. Cole. *Il diag Am Inst Min E Bul* 98:431-44 F '15; *Excerpt. Met & Chem Eng* 13:332 My '15; *Discussion. Am Inst Min E Bul* 101:1123-8 My '15
- Riffing for concentrating tables. *Il Met & Chem Eng* 13:819-20 N 1 '15
- Rotary concentrator and classifier. *Il Eng & Min J* 100:358-9 Ag 28 '15
- Wright concentrating table. C. W. Wright. *diag Eng & Min J* 100:641-3 O 16 '15

**Concentration camps**

- Science in German concentration camps. A. Gradenwitz. *Il Sci Am* 113:10-11 J1 2 '15

**Concentration cells**

- Potassium chloride concentration cells. D. A. MacInnes and K. Parker. *diag Am Chem Soc J* 37:1445-61 Je '15
- Potential of silver against silver ion in concentrated solutions of potassium and of sodium chloride, and its relation to the activities of such solutions. G. S. Forbes and K. O. Anderegg. *Am Chem Soc J* 37:1076-85 J1 '15

**Concrete**

- Concrete a plague-eradicator in New Orleans. H. P. Letton. *Eng Rec* 71:325-6 Mr 13 '15
- Concrete versus stone revetment, in the Kaw valley levee work. E. B. Murray. *Il Concrete Cem* 6:203-4 Ap '15
- Effect of proportions on density and strength of gravel concrete. R. W. Crum. *Eng & Contr* 43:314-15 Ap 7 '15
- Experiences with concrete in the republic of Panama. A. P. Crary. *Il diag Eng N* 73:314-16 F 4 '15
- Field methods in concrete construction—a consideration of materials. J. Cochran. *Concrete Cem* 6:31-2 Ja '15
- Fire-resisting qualities of concrete. W. M. Kinney. *Concrete Cem* 6:40 Ja '15
- High-strength concretes produced through lowering of surface tension of mixing water. N. C. Johnson. *Il Eng Rec* 71:320-4 Mr 13 '15
- Hydrated lime in spouted concrete. G. J. Christenauer. *Concrete Cem* 7:188 N '15
- Lime concrete extensively used in India and Burma. *Eng Rec* 71:797-8 Je 26 '15
- Mechanical disintegration of defective concrete. N. C. Johnson. *Il Eng Rec* 71:160-4 F 6 '15
- Microscope as a check on construction. N. C. Johnson. *Il Eng Rec* 71:263-5 F 27 '15
- Microscope as an aid in proportioning concrete for strength: ratio of cement to aggregate burden. N. C. Johnson. *Il Eng Rec* 71:194-7 F 13 '15
- Microscope opens new field in study of concrete. N. C. Johnson. *Il Eng Rec* 71:98-102 Ja 23 '15
- Microscope shows importance of mixing as a factor in making strong concrete. N. C. Johnson. *Eng Rec* 71:301-3 Mr 6 '15
- Oil-mixed Portland cement concrete. J. W. Page. *U S Agric Bul* 230:1-26 '15; *Abstract. Eng & Contr* 44:227-9 S 22 '15; *Excerpt. Eng Rec* 72:334-6 S 11 '15; *Excerpt (Oil-mixed concrete for damp proofing) Munic Eng* 48:376-6 Je '15; *Same. Bldg Age* 37:24 J1 '15; *Same. Am Gas Light J* 103:29 J1 12 '15; *Same. Concrete Cem* 7:30 J1 '15
- Quality of concrete controlled by tests of sand. C. M. Chapman and N. C. Johnson. *Il Eng Rec* 71:801-4 Je 26 '15
- Report on Chinese concrete. *Engineer* 118:456-J N 13 '14; *Abstract. Am Soc M E J* 37:53 Ja '15
- Selection of concrete materials. *Ry Age* 59:516 S 17 '15
- Stopping cracks in concrete. E. H. Seaman. *Concrete Cem* 7:76 Ag '15
- Tests fail to show cause of retarded set of concrete. A. W. Hartman. *Eng N* 74:847 O 28 '15
- Tests of frictional resistance of concrete on shale. E. L. Jasier. *Il diag Eng N* 74:156-8 J1 22 '15
- Use of puddling stones in mass concrete. *Concrete Cem* 5:245-6 D 14 '14
- See also* Asphalt; Bridges; Concrete; Cement; Concrete, Reinforced; Concrete construction and other headings beginning Concrete; Gunite; Pavements; Concrete; Roads; Concrete

**Aggregate**

- Aggregate sizes to be kept in stock. *Concrete Cem* 7:117-18, 155-6 S-O '15
- Burnt clay as concrete aggregate. W. W. Hay. *Il Eng & Contr* 43:453 My 19 '15
- Coal slack for concrete aggregate. R. B. Ketchum. *Eng N* 73:540 Mr 18 '15
- Concrete aggregate and sand in Kansas City: careful inspection necessary. *Eng N* 73:75 Ja 14 '15
- Concrete materials tested in a Jones-Talbot rattler. *Eng Rec* 71:390 Mr 27 '15

**Concrete—Aggregate—Continued**

- Crushed limestone aggregate for concrete pavements. A. M. Wolf. *Eng N* 74:902 N 4 '15
- Economic side of sand testing. C. M. Chapman and N. C. Johnson. *Eng Rec* 71:734-7 Je 12 '15; Same. Sibley J 30:66-70 N '15
- Effects of metal-bearing aggregate on concrete. *Concrete Cem* 6:248-9 My '15
- Field examination of concrete sand. *diag Concrete Cem* 6:303-5; 7:73-5 Je, Ag '15
- Field examination of concrete sands. C. H. Fuller. *Concrete Cem* 7:156-7 O '15
- Gravel aggregate for concrete. W. K. Hatt. *Eng N* 74:49:2-8 J1 '15
- Heating concrete aggregates. *Concrete Cem* 6:212-13 Ap '15
- Importance of proper aggregates in concrete construction. M. D. Campbell. *Eng N* 74:329-30 F 19 '15
- Investigation to determine the relative resistance to wear of concrete made of different aggregates. C. F. Shoop. *Eng & Contr* 44:144-7 Ag 25 '15
- Local sands and gravel as aggregates in concrete. F. M. McCullough. *Eng Soc W Pa* 31:334-87 My '15; Same cond. *Eng & Contr* 44:194-6 S 8 '15; Discussion. *Eng Soc W Pa* 31:368-79 My '15
- Magnesium limestone as concrete aggregate. W. F. Healey. *diag Concrete Cem* 5:257 D '14
- Mechanical grading of concrete sand. G. P. Dieckmann. *Concrete Cem* 7:68-9 Ag '15
- Method of making mineralogical analysis of sand. C. W. Tomlinson. *Am Inst Min E Bul* 101:947-56 My '15
- Portable gravel screening and washing plant. M. J. Campbell. *plan Eng* 59:345-6 Ag 20 '15
- Proportioning aggregates for Portland cement concrete. A. Meyer. *Am Gas Light J* 101:214-15-1 O 5 '14; Same. *Eng & Contr* 42:150-1 Ag 12 '14; Same cond. *Eng Rec* 70:37-8 J1 11 '14; Discussion. C. M. Chapman; W. M. Kinney. 70:38-9 J1 11 '14; Abstract. *Concrete Cem* 5:66-7 Ag '14
- Safe concrete demands knowledge of nature of sands. C. M. Chapman and N. C. Johnson. *Eng Rec* 71:771-4 Je 19 '15
- Sand for concrete and cement mortar should have jump in grading. R. H. McNelly. *Eng Rec* 72:659-62 N 27 '15
- Screening and washing plants for supplying clean and well graded aggregate. *Concrete Cem* 7:165-70 N '15
- Specifications for concrete aggregates and results of field tests. R. E. Goodwin. *Eng N* 73:247-9 F 11 '15
- State-wide survey locates road-making materials in New York. *Eng Rec* 71:488-9 Ap 17 '15
- Testing aggregates for concrete roads built by the New York highway commission. H. S. Matthews. *Eng & Contr* 43:294-6 Mr 31 '15; Same cond. *Munic Eng* 48:131-3 F '15; Excerpt (Sand for concrete pavements). *Munic J* 38:420-1 Ap 1 '15
- Testing concrete and aggregate—laboratory and field methods. R. E. Goodwin. *Concrete Cem* 7:179-82 N '15
- Use and tests of unscreened gravel; Illinois state highway department. C. Older. *Eng N* 72:1204-5 D 17 '14
- Use of beach shells as concrete aggregate. *Concrete Cem* 7:73-3 Ag '15
- Use of blast furnace slag as an aggregate in concrete. *Concrete Cem* 5:247-9; 6:210-11 D '14, Ap '15
- Use of coke breeze as concrete aggregate. W. M. Kinney; A. M. Wolf. *Concrete Cem* 7:115-16 S '15
- Use of hand, hammer crushed brick in concrete work. C. M. Wood. *Concrete Cem* 6:160-1 Mr '15
- Use of six-inch and eight-inch aggregate points to economize in concrete work. E. O. Keator. *Eng Rec* 71:556-8 My 1 '15; Abstract. *Eng M* 49:595 J1 '15
- Wearing tests for sand and gravel. F. L. Roman. *Good Roads N* 5:186-7 My 1 '15

See also Gravel; Sand

**Coloring**

- Coloring a concrete wall with grout. *Concrete Cem* 7:116 S '15

**Cost**

- Concrete cost computing chart. A. P. Hoover. *Eng N* 74:795-6 O 21 '15

**Curing**

- Boiler capacity for steam curing. *Concrete Cem* 7:185-6 N '15
- Influence of temperature on the strength of concrete. A. B. McDanel. *Ill U Eng Exp Sta Bul* 81:1-24 '15; Abstracts. *Eng N* 74:892 N 4 '15; *Eng Rec* 72:600-1 N 13 '15; *Eng & Contr* 44:406-8 N 24 '15; *Am Soc M E J* 37:726 D '15
- Proper use of steam in curing concrete products. W. M. Kinney; M. L. Conwell. *Concrete Cem* 6:253-4 My '15
- Shrinkage of concrete and conditions of curing. E. R. McMillan. *Eng Rec* 71:489-90 Ap 17 '15

**Exhibitions**

- Annual cement show at Chicago. *Eng N* 74:37:59-63 Mr '15

**Expansion**

- Expansion and contraction of concrete building measured. *Eng Rec* 71:621 My 15 '15; *Concrete Cem* 6:219 Ap '15
- Expansion in concrete sidewalks. *Munic J* 38:770-1 Je 3 '15
- Expansion measurements on a concrete factory building. S. G. Koon. *Eng N* 73:408 F 25 '15
- See also Concrete construction—Expansion joints

**Finishing**

- Application of sulphate of zinc to concrete, preparatory to painting. W. M. Kinney. *Concrete Cem* 6:37-8 Ja '15
- Bonding plaster coating to interior walls and ceilings. *Concrete Cem* 6:36-7 Ja '15
- Bonds plaster to concrete and new concrete to old. *Eng Rec* 72:213 Ag 14 '15
- Cost, appearance and wearing qualities of various methods of surface finish for concrete. *Eng & Contr* 41:113-16 Ag 11 '15
- Dustless concrete floors. *Eng Rec* 70:607 D 5 '14
- New facing material in many colors. *Concrete Cem* 7:160 O '15
- Surface treatment of concrete bridges for railway and highway traffic. A. M. Wolf. *Concrete Cem* 6:169-75 Ap '15
- See also Concrete—Coloring; Concrete, Ornamental; Concrete stone

**Freezing**

- Concrete freezing. *Sci Am* 111:482 D 5 '14
- Concreting in freezing weather. J. Hammerstein-Hennan. *Eng M* 48:743 F '15
- Frostproofing admixture for concrete. *Eng & Contr* 43:112 F 3 '15
- Frozen concrete responsible for building collapse at Saginaw, Mich. O. H. Eckert. *Eng Rec* 71:271 F 27 '15
- Integral suits for cold weather concreting. W. M. Kinney. *Sci Am* 112:249 Mr 13 '15

**Painting**

- Application of sulphate of zinc to concrete, preparatory to painting. W. M. Kinney. *Concrete Cem* 6:37-8 Ja '15
- Interior wall finishes and painting of concrete. W. R. Parker. *Eng N* 74:1137-8 D 13 '14
- See also Concrete—Coloring; Concrete—Protection

**Permeability**

- Impermeability of concrete. *J Ind & Eng Chem* 6:1033 D '14
- Permeability tests on gravel concrete; with discussion. M. O. Wilbey. *Ill W Soc E J* 19:813-58 N '14; Abstract with summary. *Am Soc M E J* 37:80-1 Ja '15; Summary. *Ind Eng* 14:411 O '14; Excerpts. *Concrete Cem* 6:296-7 Je '15

**Concrete—Continued****Protection**

Symposium on the protection of concrete against alkali. *Concrete Cem* 6:89-90; 7:33 F, J1 '15

Use of linseed oil to protect concrete from destruction by alkali. L. A. Waterbury; R. A. Hart. *Concrete Cem* 6:90-3 F '15

See also Concrete—Painting; Concrete, Reinforced

**Shrinkage**

Shrinkage of concrete and conditions of curing. F. R. McMillan. *Eng Rec* 71:189-90 Ap 17 '15

**Temperature**

Temperature changes in mass concrete; abstracts. C. H. Paul and A. B. Mayhew. *Eng N* 74:923 N 11 '15; *Eng Rec* 72:624 N 20 '15

Temperature changes in mass concrete found to be relatively small. *Eng Rec* 71:710 Jo 5 '15

See also Concrete, Effect of temperature on

**Testing**

Compressive strength of Portland cement mortars and concretes; abstract. R. J. Wig, G. M. Williams and M. R. Gates. *J Fr Inst* 180:608-13 N '15

Concrete briquettes subjected to cold weather tests. *Eng Rec* 71:275 F 27 '15

Concrete cut from actual structures stronger than field-sample specimens. R. E. Goodwin. *Eng Rec* 72:298-7 S 4 '15

Concrete field testing machine. *Eng N* 72:1269-70 D 24 '14

Concrete tests: outline of work in progress under direction of committee of American society for testing materials. *Eng & Contr* 44:28 J1 14 '15

Developments in concrete testing. *Eng N* 73:225 F 4 '15

Effect of duration of mixing on the strength of concrete. H. H. Scofield. *Eng & Contr* 43:78-9 Ja 27 '15

Experiments made to determine the effect of varying the percentage of water in concrete. R. K. Skolton. *Eng & Contr* 42:244-6 S 9 '14

Field and laboratory tests of concrete. H. S. Mattinson. *Eng N* 73:232 F 4 '15

Field concrete better than test-sample concrete. R. E. Goodwin. *Eng N* 73:350 F 18 '15

Field testing machine used on Welland ship canal. *Eng Rec* 72:112 J1 24 '15

Gravel aggregate for concrete. W. K. Hatt. *Concrete Cem* 49:2-8 J1 '15

Impermeability of concrete. *J Ind & Eng Chem* 6:1033 D '14

Influence of temperature on the strength of concrete. A. B. McDaniel. III *Eng Exp Sta Bul* 81:1-24 '15; Abstracts. *Eng N* 74:892 N 4 '15; *Eng Rec* 72:600-1 N 13 '15; *Eng & Contr* 44:405-8 N 24 '15; *Am Soc M* 19 J 37:728 D '15

Investigation to determine the relative resistance to wear of concrete made of different aggregates. C. E. Shoop. *Eng & Contr* 44:144-7 Ag 25 '15

Local sands and gravel as aggregates in concrete. F. M. McCullough. *Concrete Cem* 44:334-37 My '15; Same cond. *Eng & Contr* 44:194-6 S 8 '15; Discussion. *Eng Soc W Pa* 31:368-70 My '15

Oil-mixed concrete found generally damp-proof. L. W. Page. *Eng Rec* 72:334-5 S 11 '15

Permeability tests on gravel concrete; with discussion. M. O. Withey. *W Soc* 16 J 19: 813-18 N '14; Abstract with summary. *Am Soc M* 13 J 37:60-1 Ja '15; Summary. *Ind Eng* 14:471 O '14; Excerpt. *Concrete Cem* 6: 296-7 Ja '15

Report of committee of the American society for testing materials on standard tests of concrete. *Eng Rec* 72:14 J1 3 '15

Results of tests to determine the distribution of loads from concrete floor slabs to steel joists; abstracts. *Eng & Contr* 44:365-7 N 10 '15; *Eng Rec* 72:578-80 N 6 '15; *Eng N* 74:938 N 11 '15

Standard practice instructions for concrete testing. Laboratory. R. E. Goodwin. *Eng N* 73:302-3 F 4 '15

Testing concrete and aggregates—laboratory and field methods. R. E. Goodwin. *Concrete Cem* 7:179-82 N '15

Tests to determine temperature effects on strength of briquettes. *Concrete Cem* 7:183-4 N '15

Tests to determine the effect of normal and low temperatures on the strength of cement mortar. *Eng & Contr* 43:196-7 Mr 3 '15

Why columns failed in Edison fire. W. E. Davis. *Eng Rec* 71:150 Ja 30 '15

See also Concrete, Reinforced—Testing;

Floors, Concrete—Testing

**Waterproofing**

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**Concrete, Cinder**

Cinder concrete floors. G. B. Waite. *Eng & Contr* 41:800-3 My 27 '14; Same cond. *Ind Eng* 14:302-4 J1 '14; Discussion. *Eng & Contr* 42:512-15 D 2 '14

Results of tests of cinder concrete floor slabs, with conclusions and recommended methods of design. H. Perrine and G. E. Strehan. *Eng & Contr* 43:379-83 Ap 28 '15

Strength and other properties of typical cinder concrete used in floor construction in New York. H. Perrine and G. E. Strehan. *Eng & Contr* 43:301 Mr 31 '15

Testing cinder concrete floors. H. Perrine. *Concrete Cem* 6:25 Ja '15

**Concrete, Effect of alkalis on**

Investigation of the durability of cement drain tile in alkali soils. R. J. Wig and G. M. Williams. *Eng Soc W Pa* 31:368-70 My '15; Abstract. *J Fr Inst* 179:354-8 Mr '15; Abstract. *Eng Rec* 72:220 Ag 21 '15; Excerpt. *Concrete Cem* 7:145-7 O '15

Investigation of the effects of alkali on concrete drain tile near Lake Park, Ia. C. E. Sims. *Concrete Cem* 6:278-81 Ja '15

Symposium on the protection of concrete against alkali. *Concrete Cem* 6:89-90; 7:33 F, J1 '15

**Concrete, Effect of electricity on**

Electrolysis develops defects in but three out of 1500 concrete poles. H. G. Throop. *Elec Ry J* 45:294 F 6 '15

**Concrete, Effect of lightning on**

Effect of lightning on concrete structures. *Concrete Cem* 7:187 N '15

**Concrete, Effect of salts on**

Integral salts for cold weather concreting. W. M. Kinney. *Sci Am* 112:249 Mr 13 '15

**Concrete, Effect of sea water on**

Experiences with concrete in the republic of Panama. A. P. Cray. *Ind Eng N* 73:214-16 F 4 '15

**Concrete, Effect of sewage on**

Effect of sewage and sewage gases on concrete. *Concrete Cem* 7:31-2 J1 '15

**Concrete, Effect of temperature on**

Influence of temperature on the strength of concrete. A. B. McDaniel. III *Eng Exp Sta Bul* 81:1-24 '15; Abstracts. *Eng N* 74: 892 N 4 '15; *Eng Rec* 72:600-1 N 13 '15; *Eng & Contr* 44:405-8 N 24 '15; *Am Soc M* 19 J 37:728 D '15

Temperature changes in mass concrete; abstracts. C. H. Paul and A. B. Mayhew. *Eng N* 74:923 N 11 '15; *Eng Rec* 72:624 N 20 '15

Tests to determine temperature effects on strength of briquettes. *Concrete Cem* 7:183-4 N '15

**Concrete, Ornamental**

Making the models and molds for ornamental concrete work—using plaster and gelsolin. *Concrete Cem* 6:150-1 Mr '15

Ornamental concrete entrance of Selig zoo, Los Angeles. W. C. Sawyer. *Concrete Cem* 7:90 S '15

Stone facing aggregates in colors. *Concrete Cem* 7:159 O '15

**Concrete, Reinforced**

Building concrete silos—monolithic construction—types of commercial equipment. C. I. Gilbert. *Ind Eng N* 73:68-92, 92-3 Ag '15

Concrete and reinforced concrete in 1914. S. E. Thompson. *Eng Rec* 71:11-13 Ja 2 '15

**Concrete, Reinforced—Continued**

- Designing of reinforced concrete slabs subjected to bending and compression. A. Bull. Eng & Contr 43:454-6 My 19 '15
- Diagram facilitates estimating weight of steel in concrete. A. M. Wolf. Eng Rec 72:517-18 O 23 '15
- Draw diagrams for beams reinforced for compression. W. W. Clifford and C. H. Mangold. Eng Rec 72:472 O 16 '15
- Early reinforced concrete in England. Concrete Cem 6:85 F '15
- Electrolysis of reinforced concrete. Am Gas Light J 101:364 D 7 '14
- Fabricated unit reinforcement. II Eng & Contr 44:153-4 Ag 25 '15
- Features in the construction of new building for the Youth's companion, Boston. W. L. Conant. II diag Concrete Cem 7:133-5 O '15
- How design and methods of buying influence the cost of steel reinforcing bars. A. D. Molitor. Concrete Cem 6:184-5 Ap '15
- Large saving in steel effected by new system of flat-slab reinforcement; Youth's companion building, Boston. II plans Eng Rec 72:450-2 O 9 '15
- Light frames support reinforcement for high retaining wall. II diag Eng Rec 72:56 JI 10 '15
- Mechanics of reinforced concrete under flexure in beam and slab types. C. A. P. Turner. Boston Soc C E J 1:392-94 S '14; Discussion. 1:499-508; 2:23-47 N '14, Ja '15
- Painting reinforcing material. Concrete Cem 5:250-3 D '14
- Reinforced concrete—design and construction. Concrete Cem 6:115-17 Mr '15
- Reinforced-concrete footings economically designed. N. M. Stineman. diag Eng Rec 72:300 S 4 '15
- Reinforced-concrete footings economically designed. W. A. Lloyd. Eng Rec 72:458 O 9 '15
- Reinforced-concrete footings of special construction. diag Eng Rec 72:355-6 S 18 '15
- Reinforcing concrete columns to carry additional stories. P. R. Prusoff. II diag Eng N 74:410-11 Ag 26 '15
- Reinforcing details of Dulco building, Dayton, Ohio. diag Eng N 74:974-5 N 18 '15
- Repair of defects in reinforced concrete. Eng N 74:323 JI 29 '15
- Shop assembled reinforcement. Concrete Cem 7:161 O '15
- Special methods of reinforced concrete design; with discussion. M. J. Lorcato. diag Boston Soc C E J 2:265-82 S '15
- Steel reinforcement promises much in development. A. Brett. Concrete Cem 7:120 S '15
- Time-saving in placing reinforcing. II Concrete Cem 7:128 S '15
- Torsion strength of reinforced concrete beams. Am Soc M E J 37:49-50 Ja '15
- See also Concrete; Concrete construction

**Testing**

- Concrete column tests disclose effects of longitudinal and spiral reinforcement. diag Eng Rec 71:527-9 Ap 24 '15
- Designing of reinforced concrete beams; some data tending to show errors in present theory and practice. L. J. Mensch. Eng & Contr 44:108-11 Ag 11 '15
- Fifty-ton testing machine built in college shop. C. C. Myers. II diag Eng N 74:1050-1 N 25 '15
- Paints to prevent electrolysis in concrete structures. II: A. Gardner. II J Fr Inst 179:313-36 Mr '15; Same. J Ind & Eng Chem 7:504-10 Je '15; Same cond. Iron Tr R 57:139-40-1 JI 15 '15; Abstracts. Eng N 73:136-7 Ja 21 '15; Eng Rec 71:466-6 Ap 10 '15; Am Soc M E J 37:297 My '15; Concrete Cem 6:810 Je '15
- Shrinkage and time effects in reinforced concrete. W. R. McMillan. II Minn U Bul 3:1-41 '15; Abstracts. Eng N 73:502-3 Mr 11 '15; Eng Rec 72:551-2 Ag 28 '15; Eng & Contr 44:306-10 O 20 '15
- Tests of circular and egg-shaped reinforced concrete sewer pipe. A. T. Goldbeck. II diag Eng & Contr 43:307-9 Ap 7 '15; Same (Reinforced-concrete sewer pipe tested for stiffness and impermeability). Eng Rec 71:711-12 Je 5 '15

- Tests of some large reinforced concrete culvert pipe. W. J. Schlick. II diag Concrete Cem 6:78-80 F '15
- Tests on the shearing resistance of reinforced concrete beams; abstract. E. Brown, II. M. MacKay and C. M. Morsson. Am Soc M E J 37:724 D '15

**Concrete atomizer**

- Lining two 5-ft. tunnels by use of concrete atomizer. II Eng N 74:938-9 N 11 '15

**Concrete barges. See Barges, Concrete****Concrete benches. See Benches, Concrete****Concrete blocks**

- Building a sewer tunnel of special concrete blocks reinforced. diag Eng N 74:127-8 JI 15 '15
- Building code regulation of concrete block and other building units. II. Whipple. Concrete Cem 6:181-4 Ap '15
- Building concrete silos—unit construction with blocks and staves; with cost tables. C. D. Gilbert. II diag Concrete Cem 7:3-6, 37-8 JI '15
- Concrete block used in attractive and economical house construction at Mooseheart, Ill. II plans Concrete Cem 6:16-18 Ja '15
- Concrete blocks cover sewage filter under drains. II Eng Rec 71:333 Mr 13 '15
- Construction plant and methods employed in building a system of concrete block tunnel sewers at Edmonton, Alberta. diag Eng & Contr 43:361-3 Ap 21 '15
- Good practice in concrete block house construction. Concrete Cem 6:305-8 Ja '15
- Handling 62-ton concrete blocks at Halifax. II Eng N 74:368 Ag 19 '15
- Manufacture of hollow concrete block in the Canal Zone the administration building. II Concrete Cem 6:176-80 Ap '15
- Regulation of concrete block manufacture and use. Concrete Cem 6:208-9 Ap '15
- Toronto breakwater to curb 10-foot waves. diag Eng Rec 70:694-6 D 26 '14
- See also Concrete bricks

**Concrete bricks**

- Equipment of a concrete brick plant in hospital broom shop. II. E. Jenks. II plan Concrete Cem 6:193-5 Ap '15
- Preliminary work in brick manufacture by patients in Norfolk state hospital. II. N. Jenks. II Concrete Cem 6:136 7 Mr '15

**Concrete bridges. See Bridges, Concrete****Concrete chimneys. See Chimneys, Concrete****Concrete coating**

- Coating disintegrated stone abutments with concrete. II Eng Rec 71:337-8 Mr 13 '15
- Concrete incrustation of steel bridge girders. diag Eng N 73:1082 Jo 3 '15
- Protection of metal structures. F. H. Fay. II diag Eng Soc W Va 31:132-66 Mr '15

**Concrete columns. See Columns, Concrete****Concrete construction**

- American concrete institute; convention. Eng N 73:380-1 F 18 '15
- American concrete institute's tests on concrete columns. Eng N 73:524-7 Mr 18 '15
- Baltimore filters abound in useful hints on concrete construction and design. J. W. Armstrong. II plans Eng Rec 71:583-6 My 8 '15
- Building concrete drops on irrigation canals in western Canada. H. H. Stockton. II Concrete Cem 6:226-8 My '15
- Building the Tough-Cakes mill. J. A. Baker. II diag Eng & Min J 100:889-74 N 27 '15
- Concrete; a medium of aesthetic expression. I. K. Pond. Concrete Cem 6:119-20 Mr '15
- Concrete and reinforced concrete in 1914. S. W. Thompson. Eng Rec 71:11-13 Ja 2 '15
- Concrete buildings in Mexico. Bldg Age 37:29-30 F '15
- Concrete construction on the New York state barge canal. G. C. Mills. II diag Concrete Cem 6:205-7 Ap '15
- Concrete mantel made with pre-cast units. II diag Concrete Cem 6:138 Mr '15
- Concrete mixing and placing. Ford building, Buffalo. II plan Eng N 74:1083-4 D 9 '15
- Concrete rings, superimposed, sunk to form San Antonio pump pit. W. W. Hay. II diag Eng Rec 71:741-3 Jo 12 '15

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- Concrete-unit building construction at Cedars Rapids. *II* *diag* *Eng* N 73:675-7 Ap 8 '15
- Concrete units for crib construction. M. D. Campbell. *II* *ty* *Age* 58:476-7 Mr 12 '15
- Concrete warehouse on Brooklyn waterfront rapidly completed. T. A. Smith. *II* *Eng* *Rec* 71:298-9 Mr 6 '15
- Concrete work on the Arizona division of the Santa Fe. *II* *diag* *Ry* *Age* 58:849-53 Ap 16 '15
- Concrete work withstands severe tests in the Erie flood. L. R. Ferguson. *II* *Concrete* *Cem* 7:148-50 O '15
- Constructing the Austin Nichols building in New York. *II* *diag* *Eng* & *Contr* 43:296-9 Mr 31 '15
- Construction details of bridge across Portland harbor. *II* *diag* *Eng* N 74:865-8 N 4 '15
- Construction management. S. B. Thompson and W. O. Lichtner. *II* *diag* *W* *Soc* 16 J 20: 109-20 F '15; Same cond. *Eng* & *Contr* 43: 428-32 My 12 '15; Discussion. *W* *Soc* 16 J 20: 129-51 F '15
- Construction of sanitary manure in dairy barn at Troy, Pa. *II* *diag* *Concrete* *Cem* 6: 104-6 F '15
- Design and construction of Massachusetts institute of technology buildings. S. B. Thompson. *II* *diag* *plan* *Concrete* *Cem* 7:14-19 J1 '15; Same. *Eng* & *Contr* 43:513-18 Je 9 '15; Same cond. *Eng* *Rec* 71:748-50 Je 12 '15
- Design and construction of Midland warehouse, Chicago. *II* *diag* *plans* *Eng* & *Contr* 44:182-4 S 8 '15
- Design and construction of the Chicago Hebrew institute. *II* *plans* *Eng* & *Contr* 43:558-63 Je 23 '15
- Design and construction of the Gantner-Mattern co. knitting mill at San Francisco. R. F. Cykler. *II* *diag* *Concrete* *Cem* 6:273-7 Jo '15
- Design features of reinforced concrete swimming pool at Riverview park, Chicago. *plan* *Eng* & *Contr* 44:357 N 3 '15
- Details of a standard portable carpenter shop on construction work. *II* *plans* *Concrete* *Cem* 6:186 Ap '15
- Edge protector for concrete structures. *Munic* *Eng* 48:374-5 Jo '15
- Erecting small concrete buildings. P. H. Wilson. *II* *diag* *Bldg* *Age* 37:37-8 Jo '15
- Expansion and contraction of concrete building measured. *II* *Eng* *Rec* 71:621 My 15 '15; *Concrete* *Cem* 6:219 Ap '15
- Expansion measurements on a concrete factory building. M. C. Koon. *Eng* N 73:408 F 25 '15
- Features in the construction of new building for the Youth's companion, Boston. W. B. Conant. *II* *diag* *Concrete* *Cem* 7:133-5 O '15
- Field methods in concrete construction. J. Cochran. *Concrete* *Cem* 6:31-2, 81-3, 142-4, 187-9, 285-9 J 1; 7:23-6, 107-10, 175-8 Ja-Apr, Ja-J1, N, N '15
- Field problems in concrete construction. *Concrete* *Cem* 6:121-2 Mr '15
- First reinforced concrete arch in America. J. W. Pearl. *diag* *Concrete* *Cem* 7:75-6 Ag '15
- Five examples of cantilevered auditorium balconies. *diag* *Eng* *Rec* 72:234-5 Ag 21 '15
- Foundations for transmission line, and tower erection, Toronto power company. F. C. Connery. *II* *diag* *Am* *Inst* *R* 10 *Pro* 34:1369-77 J1 '15
- Foundations for transmission line towers and tower erection. P. M. Downing. *plan* *Am* *Inst* *R* 10 *Pro* 34:1193-7 Jo '15; Abstract. *elec* *W* 66:10 J1 3 '15
- Foundations for transmission line towers and tower erection; concreting foundations. J. A. Walls. *plan* *Am* *Inst* *R* 10 *Pro* 34:1167-78 Jo '15; Abstract. *elec* *W* 66:8-9 J1 3 '15
- Galveston's sea-wall checks hurricane's devastation. E. B. Van de Greyn. *II* *diag* *Eng* *Rec* 72:271-5 Ag 28 '15
- Good practice in concrete block house construction. *Concrete* *Cem* 6:305-8 Jo '15
- Hoist for reinforcing-steel. H. DeCamara. *diag* *Eng* N 73:395 F 25 '15
- Hydrostatic catenary flume on a concrete aqueduct. R. B. Muckleston. *II* *diag* *map* *Eng* N 74:58-63 J1 8 '15
- Large reinforced-concrete cribs used for Welland ship canal entrance. R. P. Johnson. *II* *diag* *Eng* *Rec* 71:458-60 Ap 10 '15
- Large saving in steel effected by new system of flat-slab reinforcement; Youth's companion building, Boston. *II* *plans* *Eng* *Rec* 72:450-2 O 9 '15
- Longest municipal pier in United States is nearing completion at Chicago. *II* *diag* *Eng* *Rec* 71:778-80 Jo 19 '15
- Manufacture of hollow concrete block in the Canal Zone—the administration building. *II* *Concrete* *Cem* 6:176-80 Ap '15
- Mappin terraces at the Zoo. R. N. Stroyer. *II* *diag* *Engineer* 119:156-7 F 12 '15
- Mechanics of reinforced concrete under flexure in beam and slab types. C. A. P. Turner. *Boston* *Soc* C 19 J 1:383-94 S '14; Discussion. 1:499-508; 2:23-47 N '14, Ja '15
- Method and cost of constructing reinforced concrete drops, Canadian Pacific Ry., irrigation projects. R. S. Stockton. *II* *Eng* & *Contr* 43:345-6 Ap 14 '15
- Methods and costs in constructing factory building at Houston, Texas. L. A. Hoynck. *II* *diag* *Concrete* *Cem* 6:559-63 F '15
- Methods and costs in constructing, 42-in. and 48-in. monolithic concrete sewer. E. W. Robinson. *II* *diag* *Concrete* *Cem* 7:93-6 S '15
- Methods and costs of constructing the Bay st. underpass at Mason, Ga. C. H. Fuller. *II* *diag* *Concrete* *Cem* 6:75-8 F '15
- Mixture of mortar for laying up block walls. *Concrete* *Cem* 6:30 Ja '15
- National league baseball park of reinforced concrete at Boston. W. B. Conant. *II* *diag* *Concrete* *Cem* 7:53-5 Ag '15
- New concrete construction processes and appliances. *Eng* & *Contr* 43:113 F 10 '15
- New deep water pier at Halifax, Nova Scotia. A. F. Dyar. *II* *Concrete* *Cem* 7:7-13 J1 '15; Same cond. *Eng* N 73:1204-10 Ja 24 '15
- New graving dock at South Shidea. *II* *diag* *plan* *Engineer* 120:154-6, 158 Ag 13 '15
- New York rapid transit railway extensions. E. Davis. *II* *diag* *Eng* N 73:1204-8 D 31 '14
- Pulmar memorial stadium at Princeton university. *II* *diag* *plan* *Eng* N 72:1184-7 D 10 '14
- Portable buildings of monolithic reinforced concrete. *II* *Eng* N 72:1255 D 24 '14
- Portland viaduct. W. B. Conant. *II* *diag* *Munic* *J* 39:499-502 S 30 '15
- Preliminary repair work on the Edison concrete buildings. *II* *diag* *Eng* N 73:89-91 Ja 14 '15
- Reinforced concrete as an emergency repair for an iron chimney. *II* *diag* *Eng* & *Contr* 43: 100-1 F 3 '15
- Reinforced-concrete cap of Perry memorial column. H. C. Bauld. *diag* *Eng* N 74:154-5 J1 22 '15
- Reinforced concrete—design and construction. *Concrete* *Cem* 6:115-17 Mr '15
- Reinforced concrete factory buildings; abstract. F. W. Dean. *Am* *Soc* M 10 J 37:9 Ja '15; *Iron* *Tr* R 56:518-4 Mr 11 '15; Discussion. *Am* *Soc* M 10 J 37:9-11 Ja '15
- Reinforced-concrete floating caissons for the Welland ship canal. *II* *diag* *Eng* N 73:1122-4 Jo 10 '15
- Reinforced-concrete frame of hotel Traymore erected at rate of a floor a week. *II* *plans* *Eng* *Rec* 72:50-1 J1 10 '15
- Repair of concrete buildings at Edison plant sets precedent in construction work. *II* *diag* *Eng* *Rec* 71:508-6 Ap 17 '15
- Restoring concrete buildings at Edison plant. *diag* *Eng* *Rec* 71:40 Ja 9 '15
- San Diego's municipal stadium. F. A. Rhodes. *II* *plan* *Eng* N 74:577-80 S 23 '15
- Sheepshead Bay two-mile speedway scientifically designed for high velocities. *II* *diag* *Eng* *Rec* 71:739-40 Jo 12 '15
- Steel concreting tower with slotted boltholes designed for rapid erection. *diag* *Concrete* *Cem* 6:269-70 D 1 '14
- Storage cellar built of concrete. P. H. Wilson. *II* *Bldg* *Age* 37:64 Mr '15
- Structural features of a reinforced concrete combined storage warehouse and office building in Seattle. *diag* *Eng* & *Contr* 43: 448-51 N 11 '14

**Concrete construction—Continued**

System of unit construction. *Il* Concrete Cem 7:160-1 O '15

Tall reinforced concrete coke house in Rotterdam, Holland. *Il* Eng & Contr 44:229-30 S 23 '15

Temperature measurements in concrete buildings. Concrete Cem 6:165-7 Mr '15

200,000 yards of concrete placed for \$800,000 in Lake Washington canal lock. *Il* diag plan map Eng Rec 73:141-3 J1 31 '15

U-bolt splice in heavy reinforcing bars. T: C. Atwood. *diags* Eng N 73:218 P 4 '15

Unit construction of a Portland cement mill building. D. C. Findlay. *Il* *diags* Concrete Cem 7:79-81 Ag '15

Unit construction reduces quantity of concrete. J. G. Conzelmann. *Il* Eng Rec 72:635-6 N 20 '15

Uses for concrete construction by cotton manufacturers. L. C. Wason. Textile World 49:288-91 My '15

*See also* Bridges, Concrete; Chimneys, Concrete; Columns, Concrete; Concrete, Reinforced; Concrete blocks; Concrete finishing; Concrete houses; Concrete lining; Concrete placing; Concrete slabs; Concrete stone; Dams, Concrete; Fireproof construction; Floors, Concrete; Lighthouses, Concrete; Poles, Concrete; Pontoons, Concrete; Reservoirs, Concrete; Retaining walls, Concrete; Roofs, Concrete; Sewers, Concrete; Silos, Concrete; Stairways, Concrete; Standpipes, Concrete; Tanks, Concrete; Trestles, Concrete; Walls, Concrete; Water towers, Concrete

**Cost**

Building concrete silo—unit construction with blocks and staves; with cost tables. C. D. Gilbert. *Il* *diags* Concrete Cem 7:3-6, 37-8 J1 '15

Cost of mill construction. H. T. Curran. Eng & Min J 100:345-7 Ag 28 '15; Same. Eng & Contr 44:266-8 O 6 '15

Material cost of concrete slabs. Concrete Cem 7:182 N '15

**Design**

Chart for designing reinforced concrete beams. H. R. Löffler. Eng & Contr 42:136-8 Ag 5 '14

Chicago municipal pier. *Il* *diags* Eng N 74:193-7 J1 29 '15

Design and construction features of the Palmer memorial stadium, Princeton, N. J. *Il* *diags* plan Eng & Contr 43:473-5 My 26 '15

Design and construction of a unit-cast mill building in Victoria, B. C. *Il* *diag* plans Eng & Contr 44:185-8 S 8 '15

Design methods in concrete construction. J. Cochran. Concrete Cem 6:333-4, 83-5, 145-8, 190-2, 282-4 Ja-Apr, Ja '15

Design methods in concrete construction—arches with fixed ends. A. M. Wolf. *diags* Concrete Cem 7:137-44 O '15

Design methods in concrete construction—retaining walls. S. M. Cotten. *diags* Concrete Cem 7:63-7 Ag '15

Design of rectangular concrete beams. H. Harding. Am Soc M E J 37:520-31 S '15

Design of reinforced concrete buildings. A. C. Jamil. A. M. Wolf; L. L. Vitorio. Concrete Cem 7:70-2 Ag '15

Design of reinforced concrete buildings. J. A. Curran; E. Godfrey. Concrete Cem 6:249-50 P '14

Design of reinforced concrete T-beams and rectangular beams with steel in compression. M. J. Lorente. Eng & Contr 43:182-4 P 24 '15

Designing of reinforced concrete beams; some data tending to show errors in present theory and practice. L. J. Mensch. Eng & Contr 44:108-11 Ag 11 '15

Details of the reinforced concrete building of the Ford motor co., Chicago, Ill. *Il* *diags* Eng & Contr 42:220-3 S 2 '14

Economy in the design of reinforced concrete columns. P. J. Waldram. Engineer 120:28-30, 82-4 J1 9-16 '15

Expansion joints over beams and girders. J. T. Simpson; A. M. Wolf. Concrete Cem 6:93 P '15

Graphical method for designing simple reinforced concrete beams and data for designing simple, double-reinforced and T-beams. H. R. Löffler. Eng & Contr 43:239-42 Mr 17 '15

Largest fireproof resort hotel in the world completed at Atlantic City. *Il* *diags* Eng Rec 72:11-13 J1 3 '15

Maximum stresses in tension reinforcement. M. J. Lorente. Eng & Contr 42:366 O 14 '14

National league ball park at Boston. *Il* *diags* Eng N 74:374-7 Ag 19 '15

New ruling on reinforced concrete flat slab construction by building department of Chicago. Eng & Contr 42:330 O 7 '14

New steel and concrete structure to furnish nearly sixteen acres of floor space; Birmingham warehouse in Cleveland. *diags* plan Eng Rec 72:356-7 S 18 '15

New Traymore hotel at Atlantic City. *Il* *diags* Eng N 74:18-23 J1 1 '15

Reinforced concrete and brick roundhouse of the Buffalo, Rochester & Pittsburgh Ry., at Dubois, Pa. *diags* plans Eng & Contr 44:66-9 J1 28 '15

Reinforced-concrete footings economically designed. N. M. Stinemann. *diag* Eng Rec 72:300 S 4 '15

Reinforced-concrete footings of special construction. *diags* Eng Rec 72:355-6 S 18 '15

Reinforced-concrete roundhouse at Du Bois. *Il* *diags* Eng Rec 71:167-9 P 6 '15

Shipping piers in Southwark district of Philadelphia. *Il* *diags* plans Eng N 74:121-1 Ag 26 '15

Simple method of determining the stresses in concrete arches due to temperature and rib shortening. H. R. Thayer. Eng & Contr 44:173-4 S 1 '15

Special details in reinforced concrete and steel building construction. L. W. Bruck. Eng & Contr 44:143-4 Ag 25 '15

Special methods of reinforced concrete design; with discussion. M. J. Lorente. *diags* Boston Soc C E J 2:265-82 S '15

Structural features of the Field museum of natural history, Chicago. *diags* plan Eng & Contr 44:236-7 S 22 '15

Suspended beam forms—their advantages and disadvantages. S. Olmsted. *diag* Eng Rec 71:120 Ja 23 '15

Unit-built concrete umbrella sheds. Los Angeles, California. R. H. Newman. *Il* *diags* Concrete Cem 7:20-3 J1 '15

Wall beam details in reinforced concrete building. Concrete Cem 6:88 P '15

**See also** Floors, Concrete**Expansion joints**

Expansion joints in concrete structures. *diags* Ry R 57:628-30 N 13 '15; Abstract. Eng Rec 72:632 O 30 '15

Expansion joints over beams and girders. J. T. Simpson; A. M. Wolf. Concrete Cem 6:93 P '15

Perishable dividing plate for expansion joints in concrete. Munic Eng 48:3241 My '15

**Failures**

Bridge sidewalk failure due to paving expansion. Dallas, Texas. *Il* *diag* Eng N 73:92 Ja 14 '15

Contractors to replace \$20,000 worth of concrete bridge work. J. H. Ames. *Il* Concrete Cem 7:104-6 S '15

Control of reinforced concrete construction. W. K. Hilt. Concrete Cem 6:297-8 Ja '15

Failure of 17-year-old concrete roof slab. Eng N 74:92-3 J1 8 '15

Failure of the Hippodrome arcade, Youngstown, Ohio. *diags* plan Eng N 73:1326-30 D 31 '14

Failure of the theater and Arcade building, Youngstown, Ohio. J. Godfrey. *Il* Eng & Contr 42:515-16 D 2 '14

Frozen concrete responsible for building collapse at Saginaw, Mich. O: K. Eckert. *Il* Eng Rec 71:271 P 27 '15

**Fire resistance**

Behavior of reinforced concrete in fire. *Il* Eng Rec 70:636-6 D 12 '14

Concrete as fire-resisting material. T: A. Edlison. Eng Rec 71:598 My 8 '15

**Concrete construction—Fire resistance—Cont.**

- Concrete construction and the Edison fire. L. C. Wason. *Textile World* 48:537-40 F '15  
 Concrete was melted in Edison fire. *Il Eng N* 73:362-3 F '15  
 Disastrous fire at Edison factory. *Il plan Eng Rec* 70:660-2 D 19 '14  
 Fire protection of structural members. S. Broadbent. *Concrete Cem* 6:124 Mr '15  
 Fire-resisting qualities of concrete. W. M. Kinney. *Concrete Cem* 6:40 Ja '15  
 Hot chemicals and concrete formed slag at Edison fire. *Eng Rec* 71:184 F 6 '15  
 Preliminary report of committee on Edison fire. *diag plan Eng & Contr* 43:193-6 Mr 3 '15  
 Preliminary report of committee on Edison fire; findings. *Eng & Contr* 43:145 F 17 '15; Same. *Concrete Cem* 6:130-1 Mr '15  
 Underwriters and fire protection association report on Edison fire. *Il diag plan Eng Rec* 71:239-42 F 20 '15

**Forms**

- Concrete form appliances that will interest contractors. *Il Eng Rec* 72:32 J 3 '15  
 Design, construction and detailed costs of the sliding forms for a reinforced concrete grain storage house. W. W. Hay. *Eng & Contr* 44:304-6 O 20 '15  
 Field methods in concrete construction—beam and slab forms. J. Cochran. *diag Concrete Cem* 6:285-87 Ja '15  
 Field methods in concrete construction—cleaning and lubrication of forms and centering. J. Cochran. *Concrete Cem* 7:176-8 N '15  
 Field methods in concrete construction—column forms; design and construction. J. Cochran. *Concrete Cem* 6:187-9 Ap '15  
 Field methods in concrete construction—design and construction of forms in general. J. Cochran. *Concrete Cem* 6:142-4 Mr '15  
 Field methods in concrete construction—wall forms; design and construction. J. Cochran. *Concrete Cem* 7:23-6 J 1 '15  
 Mat system lowers cost of concrete forms and strengthens structure. *Il Eng Rec* 72:879 N 27 '15  
 New system of adjustable concrete floor forms. *Il diag Concrete Cem* 6:269-70 My '15  
 Saving time in setting forms. *Il Concrete Cem* 7:103 S '15  
 Special features in forms for concrete buildings. *Il diag Eng N* 73:730 Ap 15 '15  
 Standard designs for concrete form work; drawings. *Concrete Cem* 7:57 Ag '15  
 Unit steel forms for concrete walls and floors. *Il Concrete Cem* 7:126 M '15  
 Wholen culvert form. *Il Munic J* 39:376-7 M 2 '15

**Concrete construction in mines**

- Concrete in mine work. M. Reynolds. *Colliery* 35:407-8 Mr '15  
 Concrete underground ore pocket at Copper Queen. K. M. Heidelberg. *diag Eng & Min J* 100:559-61 O 2 '15  
 Reinforced concrete props and beams in mines. S. M. Dixon. *Colliery* 35:431-2 Mr '15  
 Use of concrete underground; methods in use in some shafts in the copper country. H. T. Mercer. *diag Colliery* 35:441-26 Mr '15

**Concrete construction in winter**

- Casting concrete pipe out of doors in winter at Hamilton, Ontario. A. K. Macallum. *Il Concrete Cem* 7:174 N '15  
 Cold weather construction methods used in erecting Hotel Traymore. D. L. Kneidler. *Il diag Concrete Cem* 7:172-4 N '15  
 Concrete construction in the winter: heating the water, sand and gravel by steam and the enclosed work by stoves, salamanders, etc. H. H. Rice. *Il diag Ag* 37:34-6 F '15  
 Concrete in cold weather. L. C. Wason. *Concrete Cem* 6:94 F '15  
 Concrete road building in cold weather requires precautions. *Eng Rec* 72:841-2 N 20 '15

**Concreting in freezing weather. J. Hammersley-Heenan. Eng M 48:743 F '15**

- Cost of mill construction. H. T. Curran. *Eng & Min J* 100:346-7 Ag 28 '15; Same. *Eng & Contr* 44:266-8 O 6 '15

- Cost of winter construction. H. C. Campbell. *Eng & Min J* 100:505 O 2 '15  
 Cost of winter construction. H. T. Curran. *Eng & Min J* 100:889-90 N 27 '15  
 Effect of frost upon concrete. J. Hammersley-Heenan. *Colliery* 36:18 Ag '15  
 Features of a large winter concreting job. *Il plan Eng N* 73:538-40 Mr 18 '15  
 Method of constructing concrete road in freezing weather. H. C. Campbell. *Il Eng & Contr* 44:348 N 3 '15  
 New coal dock for the Cincinnati, Hamilton & Dayton at Toledo. *Il plan Ry Age* 59:273-4 Ag 13 '15; Same. *Ry R* 57:236-9 Ag 21 '15; Same cond. *Eng Rec* 72:163-4 Ag 7 '15  
 Paper-covered frames for cold weather concreting. A. A. Lano. *Il Eng Rec* 71:59 Ja 9 '15  
 Precautions necessary to assure successful concrete work in winter. *Concrete Cem* 7:171-2 N '15  
 Report on national frost-proofing. *Concrete Cem* 7:190-1 N '15  
 Tests to determine temperature effects on strength of briquettes. *Concrete Cem* 7:183-4 N '15  
 Toledo coal dock built in record time. *Il plan Eng N* 74:520-2 S 9 '15  
 Warning against cold weather concreting. H. A. Rands. *Eng N* 73:548-9 Mr 18 '15

**See also Concrete—Freezing**

**Concrete curbs. See Curbs, Concrete**

**Concrete dams. See Dams, Concrete**

**Concrete drain tile. See Drain tile**

**Concrete failures. See Concrete construction—Failures**

**Concrete floors. See Floors, Concrete**

**Concrete handling**

- Aggregate mechanically handled from pit to road. *Il Eng Rec* 72:133-4 J 31 '15  
 Concrete plant used on the Austin-Nichols building at Brooklyn, N. Y. T. A. Smith. *Il plans Concrete Cem* 6:261-3 My '15  
 Concrete warehouses on Brooklyn waterfront rapidly completed despite serious delays. T. A. Smith. *Il Eng Rec* 71:298-9 Mr 6 '15  
 Inexpensive bucket and hoist for concrete handling. M. H. Owen. *Il diag Concrete Cem* 6:267-8 My '15  
 Large quick-dumping concrete car used at 46th street pier. *Il Eng Rec* 72:395 S 25 '15  
 Telpher charges concrete mixer direct from cars. *diag Eng Rec* 71:408-9 Mr 27 '15  
 Tipping hopper saves labor on concrete job. (3) W. Davidson. *Il Eng Rec* 72:459-60 O 9 '15  
 Wet concrete hauled from central plant on river. *Il Eng Rec* 71:469-70 Ap 10 '15

**Concrete houses**

- Concrete block house, with double wall, which cost less than \$2,500. *Il plans Concrete Cem* 6:44-5 Ja '15  
 Concrete block used in attractive and economical house construction at Mooseheart, Ill. *Il plans Concrete Cem* 6:15-16 Ja '15  
 Concrete house with double walls. *Il plans diag Ag* 37:63-6 F '15  
 Construction of small concrete houses at San Juan. R. K. Burton. *Il diag Concrete Cem* 7:100-3 S '15  
 Cost and construction details of double wall house on Long Island. *Il Concrete Cem* 6:48-9 Ja '15  
 Country house built of concrete. *Il diag plans diag Ag* 37:42-4 F '15  
 Double-wall house construction with pre-cast wall, floor and roof units. *Il Concrete Cem* 6:20-8 Ja '15  
 Engineer's concrete block cottage—built in Riverside, Cal., for \$3,000. R. L. Newman. *Il plans Concrete Cem* 6:20-1 Ja '15  
 House with concrete walls and permanent interior form of hollow tile. G. E. Knapp. *Il diag plans Concrete Cem* 6:22-3 Ja '15  
 Houses at Forest Hills Gardens—pre-cast hollow concrete floor, wall and roof units and exposed aggregates. J. Squires. *Il Concrete Cem* 6:2-8, 63-4 Ja '15  
 Prize design in English farm cottage competition. *Il Concrete Cem* 6:218-19 Ap '15  
 Six-room house, double concrete walls, costs complete, \$3,500. *Il plans Concrete Cem* 6:47-8 Ja '15



**Concrete houses—Continued**

Steel and concrete mine houses, diag plan Eng & Min J 99:987-8 Jo 5 '15

Two-story house with walls and floors of concrete, built for less than \$3,000. II Concrete Cem 6:50-2 Ja '15

Worked out details in concrete house construction. A. M. Smith. *Concrete Cem* 6:17-18 Ja '15

See also Concrete—Painting; Concrete construction; Floors, Concrete

Concrete Institute, American. See American concrete institute

**Concrete lining**

Building invert of Milwaukee intake tunnel.

L. G. Warren, diag Eng N 74:802-3 N 4 '15

City tunnel of the Catskill aqueduct. W. 16.

Spear. Eng N 73:194-8 F 4 '15

Concrete as a furnace lining. J. C. Hawkins.

Power 41:169-70 F 2 '15

Concrete-lined oil storage reservoirs in California; construction methods and cost data; abstract. E. D. Cole. *Eng & Contr* 44:408-9 N 24 '15

Concrete lining as applied to irrigation canals. S. Porter. 17 pls U S Agric Bul 126:1-86 '14; *Excerpt* (Design and structural details). Eng & Contr 43:71-4 Ja 27 '15; *Excerpt* (Methods and costs of constructing). Eng & Contr 43:130-6 F 10 '15

Concrete lining for irrigation canals at Burbank, Wash.; abstracts. E. M. Chandler. Eng N 73:772-3 Ap 22 '15; Eng & Contr 43:489-90 Je 2 '15

Concrete lining for steel bunkers. II Power 40:813 D 8 '14

Concrete lining improves sewage-laden creek. J. D. Justin. II Eng Rec 72:161-2 Ji 24 '15

Construction of the Eden Park reservoir, Cincinnati. K. C. Crahn. II Concrete Cem 6:134-6 Mr '15

Driving and lining carried on simultaneously at Shagohulu tunnel saved timbering. R. W. Roe. *Eng Rec* 72:44-6 Ji 10 '15

ferro-concrete shaft linings. M. Gillenauz. *Eng* 35:600-1 Jo 1 '15

Harlan river four-track subway tunnel. C. Hoff. II *Eng* map Eng Rec W Pa 31:517-37; *Discussion*. 31:571-83 D '15

Lining a double track railway tunnel under traffic. R. Moncham. II *Eng* Ry Age 59:1066-8 N 19 '15; *Same*. Ry 67:845-8 N 20 '15

Same. Eng & Contr 44:306-8 N 17 '15

Lining a railway tunnel by compressed air. II Eng N 74:1033 N 25 '15

Lining the St. Louis water tunnel with concrete by means of compressed air. E. C. Davis. II Eng N 73:104-6 Ja 28 '15; *Same*. *Assn Eng Rec* J 53:287-93 D '14

Lining tunnels on the new Lawlontown-Great Falls line of the St. Paul. *Eng Ry Age* 58:878-9 My '15

Modern methods in railway tunnel construction. C. S. Churchill. *Eng Ry* 67:547-55 O 30 '15

Modifications in shaft design influenced by concrete as a lining material. Eng & Contr 43:370 Ap 28 '15

Placing a concrete lining in the Sandy Ridge tunnel. II plan Ry Age 59:533-5 N 17 '15; *Same*. Ry R 67:327-32 N 11 '15; *Same* (Self-propelled compressed-air mixing plant) Eng Rec 72:353-5 N 18 '15

Placing the concrete lining for reservoirs. Eng N 74:267-8 Ag 5 '15

Plaster lining irrigation canals and laterals, Okanogan project, U. S. reclamation service. C. Cantel. Eng & Contr 43:441-3 My 19 '15

Records of operation in handling concrete with compressed air. II *Eng* Concrete Cem 5:260-3 D '14

Records of seepage losses in concrete lined canals. H. D. Newell. Eng & Contr 44:22 Ji 7 '15

Tour of West discloses best practice in irrigation and power canal design. C. A. Farwell. Eng Rec 71:628-4 My 15 '15

Tunnel lining by compressed air. II Ry Age 57:1143-4 D 18 '14

**Concrete mixers**

Isby mixer proves economical. Eng N 74:554 N 16 '15

Batch timing and measuring device on a concrete mixer. II Eng N 72:1278 D 24 '14

Blystone mixer for concrete, plaster and mortar.

II *Eng* Age 37:81 F '15

Concrete mixer and atomizer. II Eng & Contr 42:509-10 N 25 '14

Devices for insuring correct mix on high-class work. II *Eng* Rec 72:177-8 Ag 7 '15

Grouting machine; a Marsh-Capron mixer for concrete grouting. II *Miner* J 39:160 Ji 29 '15

Mixer plant on flat car propels itself along the job. F. E. Cantwell. II Eng Rec 72:148 Ji 31 '15

New 3 1-2-cu. ft. concrete mixer. II Concrete Cem 6:271 D '14

Portable concrete mixer with elevator tower. II Eng N 73:826 Ap 29 '15

Proper regulation of air prevents clogging of pneumatic mixers. H. A. Leeuw. *Eng Rec* 72:459 O 9 '15

Rating concrete mixers. *Elec Ry J* 46:838 O 16 '15

Recent developments in concrete mixers. II Eng N 73:716-18 Ap 15 '15

Self-propelled compressed-air mixing plant lines Sandy Ridge tunnel under traffic. II *Eng* Rec 72:353-5 N 18 '15

Small batch mixer with special loading feature. II Concrete Cem 6:107 F '15

Small size concrete mixer. II Eng & Contr 44:214-15 N 15 '15

Smith-Chicago low charging concrete mixers. II *Good Roads* N 10:271 N 6 '15; *Ry Age* 59:746 O 22 '15

**Concrete mixing**

Aggregate mechanically handled from pit to road. II Eng Rec 72:133-4 Ji 31 '15

Concrete crib used successfully in dock construction at Victoria. II *Eng* plans Eng Rec 72:166-7 Ag 7 '15

Conveying concrete mixer. II *Eng* Concrete Cem 7:19-50 Ji '16

Dry mixing of concrete in a batch mixer before adding water. Concrete Cem 6:157 Mr '15

Effect of duration of mixing on the strength of concrete. H. H. Scofield. Eng & Contr 43:78-9 Ja 27 '15

English specifications for a bituminous concrete mixing plant and details of the acceptance test. W. H. Graves. Eng & Contr 42:325-6 N 30 '14

Eye is best means of controlling consistency of mix. Eng Rec 72:169 Ag 7 '15

Field methods in concrete construction. J. Cochran. Concrete Cem 6:81-3 F '15

Floating mixing plant with tower for concreting on river work. II Eng Rec 71:89 Ja 18 '15

Heating concrete aggregates. Concrete Cem 6:212-13 Ap '15

Methods and costs of concreting for modern pavement. S. Gausmann. *Elec Ry J* 45:718-19 Ap 10 '15; *Excerpt* (Track concreting costs vary with mixing methods). Eng Rec 71:451 Ap 10 '15

Microscope as a check on construction. N. C. Johnson. II Eng Rec 71:265-6 F 27 '15

Microscope shows importance of mixing as a factor in making strong concrete. N. C. Johnson. II Eng Rec 71:301-3 Mr 6 '15

Mixer car placed in center of train saves wheeling. II Eng Rec 72:241 N 20 '15

Mixing, curing and placing concrete with high pressure steam. H. P. Brown. II Eng & Contr 43:199-200 Mr 3 '15; *Abstract*. Eng Rec 71:252 F 20 '15

New records in mixing and placing concrete. Concrete Cem 7:167 Ag '15

Proper method of mixing concrete. *Eng* Age 37:30 My '15

Proportioning aggregates for Portland cement concrete. A. Moyer. *Am Gas Light J* 101:214-5+ O 5 '14; *Same*. Eng & Contr 42:150-1 Ag 12 '14; *Same* cond. Eng Rec 70:37-8 Ji 11 '14; *Discussion*. C. M. Chapman; W. M. Kinney. 70:23-9 Ji 11 '14; *Abstract*. Concrete Cem 5:66-7 Ag '14

Railroad mixing plant has bins on mixer car fed by crane. M. E. Ehrlich. II Eng Rec 72:521-2 O 25 '15

What amount of water should be used in concrete mixtures. H. C. Campbell. *Sci Am* 112:81 Ji 24 '15

**Concrete mixing—Continued**

Will mixing concrete too wet cause its eventual failure? Concrete Cem 6:264-5 My '15  
Yardage record at Kensico dam due, in part, to operation of mixers. G. T. Seabury. Eng Rec 71:199 F 13 '15

See also Concrete mixers

**Concrete piling**

Concrete anchor piles for steel sheeting. diag Eng N 72:1220-1 D 17 '14  
Concrete culvert pipe and concrete piles. Ry Ago 59:762-3 O 22 '15  
Concrete pile and cylinder foundations at Charleston. II diag Eng N 74:926-9 N 11 '15  
Concrete pile holder foundation at Lynn. E. E. Drako. II diag Am Gas Light J 102:163-6 Mr 15 '15; Discussion. 102:236-7 Ap 12 '15  
Concrete trestles on Tennessee division second track, Illinois Central R. R. M. Johnson. II Ry R 56:715-18 My 29 '15  
Data on the design and cost of concrete piles used on railroad work. diag Eng & Contr 43:452-3 My 19 '15  
Explosives for driving concrete piles. F. T. James. Eng N 74:558-9 S 16 '15  
New deep water pier at Halifax, Nova Scotia. A. F. Dyer. II Concrete Cem 7:7-13 J1 '15; Same cond. Eng N 73:1204-10 Jo 24 '15  
Unit-construction system applied to a three-mile concrete viaduct to reduce the cost. II diag Eng Rec 72:249-50 Ag 28 '15

Concrete pipe association, American. See American concrete pipe association

Concrete pipes. See Pipes, Concrete

**Concrete placing**

Beunfield gravity system for distributing concrete. II diag Concrete Cem 7:48-9 J1 '15  
Chutes for depositing concrete by gravity. H. C. McClure. Concrete Cem 5:249 D '14  
Concrete chuting plant with braced boom and chute. E. L. Jones. II Eng N 73:193-4 F 4 '15  
Concrete dome for the new Technology buildings, Cambridge, Mass. II Eng N 74:386-6 Ag 26 '15  
Concrete hoist of simple construction. II diag Concrete Cem 7:127-8 S 15 '15  
Concreting methods and records, Elephant Butte dam. M. H. Baldwin. diag Eng N 74:696-8 O 7 '15  
Concreting plant with a braced double tower. II plan Eng N 73:442-3 Mr 4 '15  
Concreting the Spaulding dam, California. II Eng N 73:1057 Jo 3 '15  
Construction plant at the Nepaug dam, Hartford, Conn. II Eng N 74:25-6 J1 1 '15  
Cost of depositing concrete in bags under water. II R. Ferriss. Eng & Contr 43:128 F 10 '15  
Improved chuting of concrete. A. M. Wolf. Eng N 74:812 S 23 '15  
Light traveling elevator facilitates concreting on building work. R. Shannon. II diag Eng Rec 71:755 Jo 12 '15  
Long reach given mixer boat by trussed boom supporting chutes. C. R. Andrew. II Eng Rec 73:552 O 30 '15  
Minimum slope for concrete chutes. W. H. Inley. Eng & Contr 44:400 N 17 '15  
Mixing, curing and placing concrete with high pressure steam. II P. Brown. II Eng & Contr 43:199-200 Mr 3 '15  
Movable concrete tower; home-made skid. L. H. Palmer. II Eng N 73:637 Ap 1 '15  
Nearness of railway tracks aids concreting of retaining walls. K. C. Cardwell. II Eng Rec 72:269-70 Ag 24 '15  
Paving river-beds with concrete. II Sci Am 113:562-4 O 23 '15  
Placing concrete in reservoir walls by compressed air, Montreal. II diag Eng N 73:122-3 Jo 21 '15  
Placing concrete in wall and dam of water supply reservoir at Montreal by compressed air method. II diag Eng & Contr 43:138 F 10 '15  
Placing concrete under water. Concrete Cem 6:240-51 My '15  
Placing concrete under water. B. A. Howes; L. C. Wason. Concrete Cem 6:252-4 D '14  
Placing the Milwaukee waterworks intake crib. R. E. Stoelting. II diag Eng N 73:1058-9 Jo 3 '15

Plastic concrete mattress for river revetment. II diag Eng N 74:262-3 Ag 5 '15  
Pneumatic outfit delivers concrete 1300 feet to tunnel forms. II Eng Rec 71:246 F 20 '15  
Proper regulation of air prevents clogging of pneumatic mixers. H. A. Lecuw. diag Eng Rec 72:450 O 9 '15

Records of operation in handling concrete with compressed air. II diag Concrete Cem 5:280-3 D '14

Test concrete poured 700 feet through vertical pipe. Eng Rec 72:476 O 16 '15

Trussed-steel chute places concrete economically on slope. E. V. Knouse. II Eng Rec 72:491 O 16 '15

Wear of pipe and trough conveyors for concrete and concrete materials. Eng & Contr 43:235-6 Mr 17 '15

World's record in concrete placing. J. E. Cassidy. Eng Rec 71:276 F 27 '15

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**Concrete plants**

Central plant for concreting over large area. E. L. Shea. II plan Eng N 74:458-9 S 3 '15  
Cold weather construction methods used in erecting Hotel Traymore. D. L. Kneedler. II diag Concrete Cem 7:172-4 N '15  
Concrete fence post factory of the C. B. & Q. R. Co., Havelsok, Neb. W. W. Midridge. II Concrete Cem 6:99-101 F '15  
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Concreting plant with one-man control. II Eng N 73:1132 Jo 10 '15  
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Methods and plant used in constructing the foundations for the Field museum of natural history, Chicago. III. II plans Eng & Contr 44:402-5 N 24 '15  
One huge single-lift lock at Louisville will guard the entrance to the Portland canal. II plan Eng Rec 71:794-6 Jo 26 '15  
Reinforced-concrete frame of Hotel Traymore erected at rate of a floor a week. II plans Eng Rec 72:560-1 J1 10 '15  
Reinforced-concrete shaft sets. L. D. Davenport. II plans Eng & Min J 99:447-8 Mr 6 '15  
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Track elevation work of the Chicago & Western Indiana R. R. in Chicago. II plan Ry R 57:651-3 N 20 '15  
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Well-designed concrete plant aids construction of waterworks dam. II plan Eng Rec 72:602-4 N 13 '15

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Concreting trains for track-elevation work. II Eng N 74:315-17 Ag 12 '15  
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Placing a concrete lining in the Sandy Ridge tunnel. II plan Ry Ago 59:583-6 S 17 '15; Same. Ry R 57:327-32 S 11 '15; Same (Self-propelled compressed-air mixing plant) Eng Rec 72:353-5 S 18 '15  
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Railroad mixing plant has bins on mixer car fed by crane. M. B. Urich. II Eng Rec 72:521-2 O 23 '15

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- Concrete slabs**  
 Casting concrete-slab bridges for the Pennsylvania R. R. L. M. Schrufer. *Eng* N 74:125-6 J 15 '15  
 Chart for the design of concrete slabs. *Concrete* Cem 7:29 J 15 '15  
 Chicago flat-slab ordinance; discussion. *Eng* N 73:174-7 D 24 '14  
 Data on reinforced concrete railroad bridges and extent to which such bridges are used. *diag* plan *Eng* & *Contr* 43:29-32 Ja 13 '15  
 Designing of reinforced concrete slabs subjected to bending and compression. A. Bull. *Eng* & *Contr* 43:454-6 My 19 '15  
 Economic design of concrete slabs. J. N. Jensen. *Eng* Rec 71:170-1 F 6 '15  
 Federal court of appeals decision on flat slab patents. *Eng* N 73:91-2 Ja 14 '15  
 Field methods in concrete construction beam and slab forms. J. Cochran. *diag* *Concrete* Cem 6:285-84 Je '15  
 Figuring strength of concrete roof slab. *diag* *Ag* 37:55 Ap '15  
 Flat-slab bridges at Denver combine permanency and good appearance. W. H. Wheeler and C. A. I. Turner. *diag* *Eng* Rec 72:38-40 J 10 '15  
 Flat slabs in 1900. B. W. Adams. *Concrete* Cem 6:213-14 Ap '15  
 Girderless concrete slabs. D. F. Stockbridge. *Eng* Rec 71:180 F 6 '15  
 Large saving in steel effected by new system of flat-slab reinforcement; Youth's companion building. *diag* plans *Eng* Rec 72:450-2 O 9 '15  
 Material cost of concrete slabs. *Concrete* Cem 7:182 N '15  
 Mechanics of reinforced concrete under flexure in beam and slab types. C. A. I. Turner. *Boston Soc* (C) 19 J 1:383-94 S '14; *Discussion*. 1:499-508; 2:23-47 N '14, Ja '15  
 Results of tests of cinder concrete floor slabs, with conclusions and recommended methods of design. H. Perrino and G. M. Stebbins. *Eng* & *Contr* 43:379-83 Ap 28 '15  
 Results of tests to determine the distribution of loads from concrete floor slabs to steel joists; abstracts. *Eng* & *Contr* 44:385-7 N 10 '15; *Eng* Rec 72:578-80 N 6 '15; *Eng* N 74:833 N 11 '15  
 Shrinkage and time effects in reinforced concrete. P. H. McMillan. *di* *Minn U Bul* 3:1-41 '15; *Abstracts*. *Eng* N 73:502-3 Mr 11 '15; *Eng* Rec 72:261-2 Ag 28 '15; *Eng* & *Contr* 44:308-10 O 20 '15  
 Test of a peculiarly designed concrete slab. *di* *diag* *Eng* N 73:1070 Ja 3 '15  
 Test of full-size reinforced-concrete bridge slab. *Eng* Rec 71:26 Ja 2 '15  
 Thin concrete base, reinforced, for pavements. C. S. Pope; J. I. Tucker. *Eng* Rec 72:174-5 Ag 7 '15  
 Thin concrete base, reinforced, may save 50 cents a square yard in paving costs. J. I. Tucker. *Eng* Rec 71:719-20 Ja 5 '15
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- Concrete stone**  
 New Delaware and Hudson office building at Albany. N. Y. M. T. Reynolds. *di* *Concrete* Cem 6:289-93 Ja '15  
 Patents on sand molds in concrete stone manufacture. *Concrete* Cem 7:136 O '15  
 Stone facing aggregates in colors. *Concrete* Cem 7:159 O '15
- Synthetic stone as used in the construction of Catskill aqueduct buildings. H. L. Rogers. *di* *diag* *Concrete* Cem 6:125-8, 132-3 Mr '15; *Abstract*. *Eng* M 49:272 My '15  
 Use of lime hydrates in factory-made concrete units. *Concrete* Cem 7:186-7 N '15
- Concrete tanks.** See Tanks, Concrete
- Concrete ties.** See Railroad ties, Concrete
- Concrete tile**  
 Layout, operation and selling methods of a structural tile manufactory. H. Whipple. *di* *diag* *Concrete* Cem 6:64-9 F '15  
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- Concrete trestles.** See Trestles, Concrete
- Condemnation of land**  
 Right of a mining or ore-milling company to condemn land. A. L. H. Street. *Eng* & *Min* J 100:767 N 6 '15
- Condensed milk.** See Milk, Condensed
- Condenser manifold**  
 How time and money were saved by welding; oxy-acetylene process saved 13 days. *di* *Foundry* 43:235 Je '15
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- Condensers (electricity)**  
 Helshy tower condensers. *di* *Elec* R & W *Elec* N 67:586-7 N 6 '15  
 Moschick condenser; abstract. C. C. Garrard. *diag* *Elec* W 66:710 S 25 '15
- Condensers (steam)**  
 Air in jet-condenser practice. E. Brown. *Power* 41:404-5 Mr 23 '15  
 Barometric condenser used as a water heater. K. M. Gilbert. *plan* *Power* 42:230 Ag 17 '15  
 Basis for rational design of heat transfer apparatus. E. E. Wilson. *Am Soc* M E J 37: 516-9; *Discussion*. 37:549-51 S '15  
 Cleaning of condenser tubes. *Power* 42:738 N 23 '15  
 Condensers for evaporating apparatus. E. W. Kerr. *diag* *Met* & *Chem* *Eng* 13:551-7 S 1 '15  
 Corrosion of condenser tubes. E. Bate. *Gen* *Elec* R 17:882-90 S '14; *Abstract*. *Met* & *Chem* *Eng* 12:656-7 O '14; *Abstract*. *Ind* *Eng* 14:413-14 O '14  
 Corrosion of condenser tubes. *Power* 41:355 Mr 9 '15  
 Deane ejector condenser. *di* *Power* 41:546 Ap 20 '15  
 Erecting 3000-lb. barometric jet condenser. C. A. Hirschberg. *di* *Power* 42:540-8 O 19 '15  
 High vacuum with surface condenser. *di* *Power* 42:338-9 S 7 '15  
 Interpretations of data on steam-condenser performance. H. A. Coxsen, Jr. *di* *Elec* W 66: 1084-5 N 13 '15  
 Large-sized surface condenser. *di* *diag* *Elec* W 65:124 Je 9 '15  
 Large surface condenser for Commonwealth Edison company. *diag* plans *Power* 41:474-7 Ap 6 '15  
 Modern power-house condensing plant. A. Arnold. *Int* E E J 63:848-50 Je 15 '15  
 New condenser gauge; the Bourne vacuum efficiency and absolute pressure gauge. *diag* *Power* 40:877-8 J 22 '14  
 Notes on the cooling of condensing water. C. H. Jeffrey. *Int* E E J 63:824-8 Je 15 '15  
 Outfit for testing surface-condenser tubes. J. Parrish. *diag* *Power* 42:624 N 2 '15  
 Popular misconceptions concerning condensers. E. R. Low. *Power* 42:16-17 J 6 '15  
 Removing air from condensers. C. W. Caywood. *plan* *Power* 41:723 My 25 '15  
 Removing the air from surface condensers. E. T. Blinn. *di* *Power* 42:591-2 O 26 '15  
 Scheme to detect salt-water leakage in surface condensers. *di* *Elec* W 66:1093 N 13 '15  
 Simple physical tests for condenser tubes. H. A. Coxsen, Jr. *di* *Elec* W 66:942 S 18 '15  
 Surface condenser; with discussion. C. F. Braun. *diag* *Am Soc* M E J 37:459-55 Ag '15  
 Two-stage condenser. P. Banuel. *diag* *Power* 42:403-7 S 21 '15; *Excerpt*. *Elec* W 66:1148-9 N 20 '15  
 Ways of cleaning steam condenser tubes that save time. *di* *Elec* W 66:1081-2 N 6 '15  
*See also* Cooling towers; Steam engines
- Conductivity, Electric.** See Electric conductivity

- Conductors, Electric.** See **Electric conductors**
- Conduits**  
 Conduits and insulation for heating pipes. C: L. Hubbard. *diag* Dom Eng 73:252-3 Ag 28 '15  
 Oneida street crossing under Milwaukee river. *fl plan* Eng Rec 70:816-17 D 5 '14  
*See also* Electric conduits; Subways (conduits); Water conduits
- Confectionery**  
 Electric drive in confectionery making. *fl Elec* W 65:791-2 Mr 27 '15
- Conference of governors**  
 8th annual conference, Boston, Aug. 24-27. *Elec R & W Elec'n* 67:482-3 S 11 '15
- Congo.** See **Kongo, Belgian**
- Coniferae**  
 Oils of the coniferae. IV—The leaf and twig oils of digger pine, lodgepole pine, and red fir. A. W. Schorger. *J Ind & Eng Chem* 7:24-6 Ja '15  
 Tannin content of Pacific coast conifers. H. K. Benson and T. G. Thompson. *fl J Ind & Eng Chem* 7:915-16 N '15  
 Yield of by-products from destructive distillation of some western conifers. H. K. Benson and M. Darrin. *J Ind & Eng Chem* 7:916-18 N '15
- Conjuring**  
 Methods of Hindu jugglery and magic: the Indian basket trick. S. Ghosh. *fl Sci Am* 111:526-31 D 26 '14
- Connecticut**  
 Colonial architecture in Connecticut. W. S. Bassett. *fl Arch Rec* 37:360-3, 445-52, 547-56; 38:672-80 Ap-Je, D '15
- Connecticut master plumbers' association**  
 25th annual convention, Bridgeport, Conn., May 12. Dom Eng 71:223-5 My 23 '15
- Conservation of resources**  
 National conservation and water powers. H. H. Chapman. *fl Am For* 21:981-6 O '15  
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- Constantinople**  
**Defenses**  
 Defense of Constantinople. H. C. Woods. *fl Sci Am* 8 80:23-31 J 3 '15
- Constitution (frigate)**  
 Fight between the Constitution and the Guerriere. *fl Sci Am* 113:14-15 J 3 '15
- Constrained wave.** See **Ship resistance**
- Construction.** See **Architecture**; **Building**; **Engineering**
- Construction camps**  
 Buffalo, Rochester & Pittsburgh standard outfit cars. *fl plans* Ry Age 58:1445-7 Je 18 '15  
 Construction camp, Elephant Butte, N. M. J. I. Graham. *fl diag map* Eng N 72:1300-4 D 31 '14  
 Feeding the multitude: experiences in boarding a construction force of 5,000 men. Eng & Contr 43:sup28-9 My 5 '15  
 Knockdown camp buildings. C: T. Ives. *fl diag* Eng N 73:31-2 Ju 7 '15  
 Messhouse management at the Arrowrock dam. R. R. Lawson. *fl Eng N* 73:1201-3 Je 24 '15  
 Modern small sized construction camp with some costs on feeding men. R. W. Robinson. *plan* Eng & Contr 43:518-20 Ap 7 '15  
 Organization and equipment of convict camps in Georgia: methods and cost. J. C. Koch. *fl diag* Eng & Contr 43:493-5, 500-2 My 12, Je 2 '15  
 Quebec-bridge camp and yards. *fl plan* Eng N 74:748-9 O 14 '15  
 Six types of construction camp garbage and refuse incinerators. *diag* Eng & Contr 44:163-5 S 1 '15  
 Solution of the construction camp club house problem. Eng & Contr 44:118 Ag 18 '15  
 System in managing camp boarding-house pays contractor. T. Radington. *Eng Rec* 71:662 My 22 '15
- Consular service**  
 Consular service in business getting. Iron Age 96:526-7 S 2 '15
- Plea for scientific and technical commissioners.** W. P. Digby. *Inst J* 10 J 88:799-801 Je 1 '15; *Excerpts, Met & Chem Eng* 13:802 Ag '15
- Contact electricity**  
 Contact electrification and the electric current. F. Sanford. *Sci Am* 8 80:322-3 N 20 '15
- Continuation schools.** See **Evening and continuation schools**
- Continued fractions.** See **Fractions, Continued**
- Contraband of war**  
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- Contract letting.** See **Contracts, Letting of**
- Contractors**  
 Accounting system for contractors. *Elec R & W Elec'n* 66:152 Ja 23 '15  
 Business relation between contractor and engineer. H. B. Ruchnell. *Munic Eng* 49:73-4 Ag '15  
 Contractor and management engineering. Eng & Contr 42:573 D 23 '14  
 Contractor's method for holding good men. M. C. Tuttle. *Eng N* 73:694-5 Ap 8 '15  
 Cost of doing business. C: W. Hill. Dom Eng 71:157, 306-7 My 8, Je 12 '15  
 Cost system for contractor or jobber. Metal Work 83:599-600 J Ap 23 '15  
 Diesel engine for the contractor—why not? H. D. Hammond. *fl Eng Rec* 71:400-10 Mr 27 '15  
 Does publication of costs endanger the contractor? Eng & Contr 42:329-30 O 7 '14  
 Efficiency system for road contractors. J: H. Hammond. Eng & Contr 43:562-3 Je 23 '15  
 Engineering contractor. H. P. Gillette. Eng & Contr 44:315-17 O 20 '15  
 Engineers from the contractor's viewpoint. R: W. Sherman. Eng N 72:1138 D 3 '14  
 From the contractors' point of view. W. A. Rogers. Eng Rec 71:15 Ja 2 '15  
 Greater care in employing workmen will pay the contractor. H. D. Hammond. Eng Rec 71:501-2 Ap 17 '15  
 Guide posts in the contracting business. J. C. Walker. Metal Work 83:607-9 Ap 23 '15  
 Keeping accurate daily and total cost sheets will pay the contractor. C: B. Montgomery. Eng Rec 71:535-6 Ap 24 '15  
 Model record of distribution of construction plant. *fl Eng N* 74:218-19 J 1 29 '15  
 Problem of extras. Concrete Cam 5:255 D '14  
 Selecting construction power-plant system. Eng N 74:265-7 N 18 '15  
 Specialized experience of engineers and contractors vital to country's defense. C: Perrine. *fl Eng Rec* 73:594-6 N 13 '15  
 System for the engineer and contractor. T: Hurwick. *fl Int & Ven* 11:27-34 N; 15-21 D '14; 12:18-23 Ja '15  
*See also* Day labor; Electric contractors
- Contractors' camps.** See **Construction camps**
- Contracts**  
 Acceptance binds parties to contract. E. J. Buckley. Metal Work 84:355 N 19 '15  
 Avoiding being at suitors' or solicitors' mercy. E. J. Buckley. *Elec R & W Elec'n* 67:486-6 S 11 '15  
 Changing plans on the contractor. Eng Rec 71:351 Mr 30 '15  
 Comment on cost of quantity surveys of buildings and a proposed survey guarantee. W. K. Palmer. Eng & Contr 43:518-19 Je 9 '15  
 Contracts by municipal officers. J: Simpson. Munic J 39:807-8 N 25 '15  
 Contractual relations between clients and accountants. H. M. Temple. *J Account* 30:291-8 O '15  
 Court decision on the inviolability of test boring records. Eng & Contr 43:416-17 My 12 '15  
 Effect of contract not to go again into plumbing business. Dom Eng 70:170 F 6 '15  
 How a Utah mining contract was interpreted. A. L. H. Street. Eng & Min J 100:675-6 O 23 '15  
 Misleading boring records are grounds for recovery of damages by contractors. Eng Rec 71:554-5 My 1 '15  
 Some contracts must be in written form. E. J. Buckley. Metal Work 83:491 Mr 26 '15  
*See also* Bridge contracts; Building contracts; Commercial law; Contractors; Guaranties and sureties; Heating contracts; Partnership; Roads—Contracts; Sales; Street lighting—Contracts; Trade agreements

**Contracts, Letting of**

Alternate specifications for public work are legal. L. T. Pierce. *Eng N* 71:1048-50 N 25 '15  
Track work by contractor or way department. S. Clausmann. *Electr* *Eng* 45:895-6 My 8 '15

**Controllers, Electric.** See **Electric controllers****Convalescent homes**

Burke foundation for convalescents, White Plains, N. Y. *II Arch & Bldg* 47:317-23 S 8 '15  
Plumbing and heating in Burke home. *II Metal Work* 83:506-7 J. Apr 2 '15  
Winifred Masterson Burke relief foundation, White Plains, N. Y.; views and plans. *Brickb* 21:pl 91-6 J1 '15

**Conversion tables.** See **Temperature Measurement****Converters**

Concentration of gold in bottoms in the copper converter; abstract. H. P. Collins. *Mot & Chem Eng* 13:416 J1 '15  
Copper converter patent. *diag Mot & Chem Eng* 13:924 D 1 '15  
Gunster-lined converters. J. Gregson. *Iron Age* 94:1292 D 3 '14  
Limitations of the electric furnace in the manufacture of steel castings. M. P. Luke. *Mot & Chem Eng* 13:137-8 Mr '15

See also **Foundry practice**; **Metallurgy**; **Ore treatment**

**Converters, Rotary.** See **Rotary converters****Converters, Synchronous.** See **Rotary converters****Convex heads.** See **Boiler heads****Conveying machinery**

Belt conveyors will help simultaneous driving and lining of air tunnel. G. D. Emerson. *II diag* *map Eng Rec* 72:218-19 Ag 21 '15  
Conveyor-belt calculating chart. J. D. Mooney and D. L. Burnell. *Am Inst Min & Ind* 106:1937-9 S '15; Same. *Eng & Min J* 100:662-3 O 2 '15; Same. *Mot & Chem Eng* 13:818-19 N 1 '15; Abstract. *Am Soc M E J* 37:610-11 O '15

Conveyors and conveyor systems. C. F. Herington. *diag Mach* 21:386-8 Ja '15

Cost of conveyors at the Arizona copper co.'s new smelter. *diag Eng & Min J* 99:329-30 Fe 13 '15

Cost of loading bricks into a box car by means of a portable belt conveyor. A. C. Haskell. *diag Eng & Contr* 44:201 S 15 '15

Efford-Wood bucket conveyor. *II Power* 42:78 J1 20 '15

Handling bricks with gravity roller conveyors. W. B. Conant. *II Eng N* 74:834-5 O 28 '15

Marine terminal machinery. H. Sawyer. *Int Marine Eng* 20:109-11 Mr '15

Mechanical handling of coal and ashes in the power plant. C. C. Brinley. *II diag Eng M* 49:872-87; 50:65-77 S-O '15

Methods and costs of belt conveyor earth-handling for the Lahontan dam. *Eng & Contr* 44:414 N 24 '15

Simple conveyor-belt cleaner. *II Eng & Min J* 100:601 O 9 '15

Unique conveyor in automobile plant. *II plan Iron Age* 96:565-8 S 9 '15

See also **Ash handling**; **Buckets**; **Cableways**; **Coal handling**; **Cotton handling**; **Cranes, derricks, etc.**; **Freight handling**; **Hoisting machinery**; **Loading and unloading**; **Mail handling**; **Mechanical handling**; **Mining machinery**; **Ore handling**; **Pneumatic tubes**; **Talpherage**

**Conveyors.** See **Conveying machinery****Convict labor**

Colorado makes 50 per cent saving with convict labor. J. E. Maloney. *Eng Rec* 72:444 O 9 '15

Convict classification for state road work. G. P. Coleman. *Eng Rec* 71:751-2 Ja 12 '15

Convict labor for highway work. G. P. Coleman. *Good Roads* n s 10:208-10 O 2 '15

Convict labor in road construction in Colorado; with discussion. T. J. Wihart. *Good Roads* n s 9:101-3 Mr 8 '15; Excerpt. *Eng N* 73:375 Fe 25 '15

Convict labor on country roads. G. C. Warren. *II Munic Eng* 48:26-35 Ja '15

Convict work in Arizona. F. C. Twitchell. *Munic J* 39:430-2 S 16 '15

Organization and equipment of convict camps in Georgia; methods and cost. J. C. Koch. *II diag Eng & Contr* 43:433-5, 500-2 My 12, Je 2 '15

Road building by convict labor. *II Good Roads* n s 8:211-18 D 5 '14

Road building with convict labor in Fulton county, Georgia. W. T. Wilson. *II Eng & Contr* 42:440-2 N 4 '14

Road construction in Reading township, Livingston county, with convict labor. H. H. Dempster. *II Eng & Contr* 41:39-41 J1 14 '15

Utilization of short-term convicts for highway work in Georgia. J. L. Stanford. *Munic Eng* 48:121-6 Fe '15; Same. *Eng & Contr* 43:230-1 Mr 31 '15

**Cook, Frederick Albert.** 1865-

Dr. Cook and Crocker Land. M. S. Balch. *Sci Am* 113:359 O 23 '15

Dr. Cook as an object lesson. *Sci Am* 113:286 O 2 '15

**Cook county, Illinois**

Cook county tuberculosis colony at Oak Forest, Ill. C. A. Erickson. *II plans* *Brickb* 24:273-6, pl 158-60 N '15

Highway program of Cook county, Illinois. *II map Eng Rec* 70:648-9 D 12 '14

**Charities**

Cook county infirmary at Oak Forest, Ill. C. A. Erickson. *II plans* *Brickb* 21:277-82, pl 161-5 N '15

**Cookers, Steam.** See **Steam cookers****Cookery**

See also **Baking powder**; **Canning and preserving**; **Electric cooking**; **Gas cooking**; **Kitchens**

**Cooking fats.** See **Oils and fats****Coolidge tube.** See **X rays****Cooling**

Air-compressor cooling with water barrels. J. Simmons. *II Eng & Min J* 100:189 J1 31 '15

Air cooling plant, New York Central R. R. Mot Haven yard, New York. M. Purcell and M. E. Gannon. *II plans* *Eng* 15:703-5 My 22 '15

Air cooling with water. L. N. Evans. *Heat & Ven* 12:41 J1 '15

British Portland cement making machinery; cooling of cement clinker. *diag Engineer* 120:126-8 Ag 6 '15

Cooled drinking water. L. F. Mason. *Am Water Works Assn J* 24:22 33 Je '15; Abstract. *Eng M* 49:916-17 S '15

Cooling two rooms in a country residence. A. M. Feldman. *diag Heat & Ven* 11:33-4 Mr '14; Same. *Dom Eng* 68:298 Mr 7 '14; Same. *Metal Work* 81:282-3 Fe 13 '14; Same. *with discussion*. *Am Soc Heat & V* 13:20:70-85 '14

Cooling water and air for power plants. *II Sci Am* 80:117 Ag 21 '15

Counter-current lubricating oil cooler. *diag Iron Age* 96:199 J1 22 '15

Heating and ventilating an office building by electricity; Hydraulic power co.'s plant at Niagara Falls. C. F. Herington. *II diag plan Heat & Ven* 12:15-22 Je '15

Principle factors governing the choice of method of cooling power transformers as related to their load and operating conditions. W. S. Moody. *II Gen Elec R* 18:839-41 Ag '15

Sprays for cooling water. *II diag Mot & Chem Eng* 13:101 Je '15

Survey of the refrigeration field as it exists today. H. L. Holloman. *Gen Elec R* 18:65-7 Ja '15

Ventilating and cooling a church. *plan Bldg Age* 37:61-2 S '15

Ventilating and cooling church edifice. *plan Metal Work* 82:787-8 D 11 '14

Ward-cooling plant in a hospital. A. M. Feldman. *II plans* *Am Soc Heat & V* 13:20:74-9 '14; Same. *Metal Work* 81:336-8 Fe 27 '14; Same cond. *Heat & Ven* 11:21-3 Fe '14

See also **Automobile engines—Cooling**; **Cold storage**; **Cooling ponds**; **Cooling towers**; **Cooling water**; **Gas and oil engines—Cooling**

**Cooling ponds**

- Cooling plant at Bluestone. *Elec Ry J* 45:1123 Je 12 '15  
 Cooling ponds for condensing engines. L. H. Parker. *Il Textile World* 49:626-30 S '15  
 Cooling-water pond and system for a city sub-station. F. Buch. *diag Elec W* 65:297-9 Ja 30 '15  
 Costs on cooling-pond construction. *Il Elec W* 66:808-9 O 9 '15  
 Gain by use of spray nozzles. *Il Power* 42:578 O 26 '15  
 Making a spray cooling pond. J. I. Blair. *Il plan Power* 41:516 Ap 13 '15  
 New spray head for cooling ponds. *Il diag Elec W* 66:880 O 16 '15  
 Spray cooling systems. L. H. Parker. *Power* 42:563-4 O 19 '15  
 Thomas spray head. *Il Power* 42:644-5 N 9 '15

**Cooling towers**

- Calculations for the operation of the cooling tower. W. Kent. *Ind Engg* 15:68-72 Ag '15  
 Cooling towers and cooling ponds; abstract. W. G. Stephan. *Am Soc M E J* 37:59 Ja '15  
 Cooling water of condensation; introduction to a collection of psychrometric tables for cooling tower work. *Textile World* 49:693-4 S '15  
 Electrification on the London and South-western railway. *diag Engineer* 120:348-9 O 8 '15  
 Forced-draft cooling towers. R. R. Goodrich. *diag Power* 41:121-4 Ja 26 '15  
 Getting the proper vacuum in summer. J. Wilmore. *diag Elec W* 66:358-63 Ag 14 '15  
 Home-made cooling tower. A. J. Williams. *Il diag Power* 41:847-8 Je 22 '15  
 Notes on the cooling of condensing water. C. S. Jeffrey. *Inst M E J* 63:831-8 Je 15 '15  
 Stack cooling towers. *Il Power* 43:306-6 Ag 31 '15  
 Two-stage condenser. P. Banuel. *diag Power* 42:402-7 S 21 '15  
 Vacuum fluid cooler. *diag Power* 41:542-3 Ap 20 '15  
 Washington avenue power plant, Scranton, Penn. W. O. Rogers. *Il Power* 41:869-70 Jo 29 '15

**Cooling water**

- Gas-engine cooling water. G. A. Field. *diag Power* 41:438 Mr 30 '15

**Cooperation**

- Cooperative organization business methods. W. H. Kerr and G. A. Nubstoll. *bibliog U S Agric Bul* 178:1-21 '15  
 Manufacturing plant general store of the Cleveland hardware company. F. L. Prontiss. *Il Iron Age* 96:235-6 Ji 29 '15  
 Works store operated at a profit. *Il Iron Age* 96:1348 Ja 17 '15

See also Profit sharing

**Cooperative stores. See Cooperation****Copper**

- Absorption of gases by refined copper. W. Stahl. *Engg & Min J* 100:52 Ji 10 '15  
 Action of acetylene on metals. A. C. Morrison. *Sci Am* 113:487 D 4 '15  
 Battery array of copper: report of subcommittee. *J Ind & Engg Chem* 7:546-7 Jo '15  
 Commercial classification of refined copper. L. Addicks. *Foundry* 43:32-4 Ja '15; Same. *Iron Tr R* 55:329-31 F 11 '15  
 Copper assay. S. Fischer, jr. *Met & Chem Engg* 12:773 D '14  
 Copper deposits in the Red Beds of south-western Oklahoma. A. M. Ruth. *Il Geon Geol* 10:140-50 F '15  
 Copper wire tables. *U S Bur Stand Circ* 31:1-76 '14  
 Determining weight of deposit. L. C. Wilson. *Metal Ind n s* 13:152-4, 277-8 Ap, Ji '15  
 Effects of repeated remelting on copper. F. O. Clements. *Il Metal Ind n s* 12:374-6 S '14; Same. *Iron Tr R* 55:486 S 10 '14; Same cond. *Foundry* 43:71-2 F '15  
 German copper reserves in electric circuits. F. Loppé. *Engg M* 50:117 O '15  
 Heat treatment of copper and brass. C. R. Hayward. *Il Metal Ind n s* 13:275-7 Ji '15  
 Incremental armature copper losses at no-load and armature tooth eddy-current losses. A. Press. *diag Inst E E J* 53:820-3 Jo 15 '15  
 Metallurgy of copper. W. Campbell. *Met & Chem Engg* 13:721 O 15 '15

**Molybdenum and copper. C. Vickers. Foundry**

- 43:344+ S '15  
 New test for copper. W. G. Lyle, L. J. Curtman and J. T. W. Marshall. *Am Chem Soc J* 37:1471-81 Jo '15  
 Physical properties of copper as effected by small quantities of phosphorus manganese and tin. C. P. Karr. *Metal Ind n s* 12:513-14 D '14  
 Reduction of copper oxide in alcohol vapor in reducing sugar determinations and copper analysis. A. Wedderburn. *J Ind & Engg Chem* 7:610-11 Ji '15  
 Specific heat of copper in the interval 0° to 50° C. D. R. Harper. *Il U S Bur Stand Bul* 11:259-318 Mr 1 '15  
 Substitutes for copper in Germany. *Elec W* 66:1040 N 6 '15  
 Symposium on copper. *Met & Chem Engg* 13:657-62 O 1 '15  
 Use of hydrofluoric acid in the separation of copper and lead from tin and antimony by means of the electric current. L. W. McCay. *Am Chem Soc J* 36:3375-81 N '14  
 Welding copper and copper alloys by acetylene methods. J. E. Springer. *Ry Age (Mech ed)* 89:367-9 Ji '15

See also Brass; Bronze; Copper metallurgy; Copper mines and mining, and other headings beginning Copper

**Copper alloys**

- Brass and bronze--offsprings of copper. J. R. Schipper. *Il map Automobile* 33:315-19, 368-70, 412-13 Ag 19-S 2 '15  
 Copper alloys with notes on brass founding. H. L. Renson. *diag Metal Ind n s* 13:318-21 Ag '15  
 Fatigue of copper alloys. R. Jonson. *Metal Ind n s* 13:283-4 Ji '15; Same. *Engg Rec* 72:22-3 Ji 3 '15; Same, with discussion. *Foundry* 43:311-12 Ag '15  
 Iodide method applied to the determination of copper in the presence of tin. R. W. Colman. *J Ind & Engg Chem* 7:764-6 S '15  
 Melting point of copper alloys. *Am Gas Light J* 103:109 Ag 16 '15  
 Spectral analysis of bearing metals and high-copper content alloys. C. G. Luth. *Met & Chem Engg* 13:346-7 Jo '15

See also Brass; Bronze; Gun metal

**Copper compounds**

- Salts of the halogenoacetic acids. W. G. Pateman and D. B. Conrad. *Am Chem Soc J* 37:2554-7 N '15

**Copper converters. See Converters****Copper cyanide**

- Copper cyanide plating solutions. M. C. Weber. *Metal Ind n s* 13:95-6 Mr '15; Same. *Met & Chem Engg* 13:255-6 Ap '15; Same. *Foundry* 43:197-8 My '15; Same. *Sci Am N* 79:302 My 8 '15  
 Economy and efficiency of copper cyanide. C. H. Proctor. *Foundry* 43:199-200 My '15  
 Economy of copper cyanide. C. Littmar. *Metal Ind n s* 12:526 D '14

**Copper founding**

- Application of the Coolidge tube to metallurgical research. W. P. Davay. *Il Gen Elec R* 18:134-6 F '15; Same. *Engineer* 119:350-1 Ap 9 '15; Same. *Sci Am N* 79:331 My 22 '15  
 Boronized cast copper; abstract. R. Weintraub. *Met & Chem Engg* 13:721 O 15 '15  
 Effects of repeated remelting on copper. F. O. Clements. *Il Metal Ind n s* 12:374-6 S '14; Same. *Iron Tr R* 55:486 S 10 '14; Same cond. *Foundry* 43:71-2 F '15

**Copper industry and trade**

- Australian copper production, 1914. W. P. Geary. *Engg & Min J* 99:191 Ja 23 '15  
 British Columbia copper co. *Engg & Min J* 100:116 Ji 17 '15  
 China (Copper report for 1914. *Engg & Min J* 100:20-1 Ji 3 '15  
 Contributions of the chemist to the copper industry. J. H. F. Horroshoff. *J Ind & Engg Chem* 7:274-5 Ap '15  
 Copper and the electrical industry. *Il Elec W* 66:1017-19 N 6 '15  
 Copper in Germany. *Engg & Min J* 99:228-9, 252, 453 Ja 30, Mr 6 '15  
 Copper statistics. *Engg & Min J* 99:51-6 Ja 9 '15

**Copper industry and trade - Continued**

- Miami Copper in 1914. Eng & Min J 99:766 My 7 '15  
 Nickel, copper and mercury as affected by the war. J Ind & Eng Chem 7:71-2 Ja '15  
 Non-ferrous metals and the war. W. R. Ingalls. Iron Age 99:420-1 Ag 19 '15  
 Position of copper during the war period. J. B. C. Kershaw. Engineer 119:468-9 My 7 '15  
 Production of copper in 1914. Mee R & W Mee's 66:313 F 13 '15  
 Production of copper in 1914. Eng & Min J 99:706 Ap 17 '15  
 Ray Consolidated in 1914. Eng & Min J 99:707-8 Ap 17 '15  
 United States smelting, refining and mining co. report for 1914. Eng & Min J 99:823 My 8 '15  
 Utah Copper in 1914. Eng & Min J 99:824-5 My 8 '15

See also Butte & Superior copper co.

**Copper metallurgy**

- Advances in copper smelting. F. Laist. Met & Chem Eng 13:858 O 1 '15  
 Anaconda leaching and acid plants. E. P. Mathewson. II plans Eng & Min J 99:723-7 Ap 24 '15  
 Arizona copper co.'s Dorr thickener. D. Cole. II Eng & Min J 100:131-4 Jl 24 '15  
 Bolivian copper concentration. F. A. Sundt. Eng & Min J 100:102 Jl 17 '15  
 Braden copper co.'s concentrator at Sewell, Chile. Eng & Min J 100:894-5 N 27 '15  
 British Columbia copper co.'s smelter, Greenwood, B. C. F. K. Brunton. Eng & Min J 100:1401-17 Jl '15  
 Cause for copper hydrometallurgy: inexpensive and efficient treatment of smelter slag dust and carbonate ore. G. C. Wentby. II Met & Chem Eng 13:295-7 My '15  
 Cementation at the Wallaroo & Moonta mines. II Eng & Min J 99:458-9 Mr 6 '15  
 Chloridizing blast roasting and leaching. G. A. Kemp. II Eng & Min J 99:265-9, 315-22 F 6-13 '15  
 Concentration at Nevada consolidated copper co. II Eng & Min J 99:265-9, 315-22 F 6-13 '15  
 Copper hydrometallurgy. Met & Chem Eng 13:461 Jl '15  
 Copper hydrometallurgy; patent of R. F. Bacon. Met & Chem Eng 13:872 N 15 '15  
 Copper leaching; discussion. L. D. Hickok and others. Met & Chem Eng 13:319-24 My '15  
 Copper metallurgy in 1914. Met & Chem Eng 13:5 Ja '15  
 Copper metallurgy of the southwest. J. Douglas. flow sheet Met & Chem Eng 13:658-9 O 1 '15  
 Copper Queen smelting works. R. H. Vail. II Eng & Min J 99:1-8 Ja 2 '15  
 Copper smelting in Japan. M. Ikeda. II Eng & Min J 99:2681-2703 N '14; Discussion. 101:1173-4 My '15  
 Copper smelting in the Caucasus. map Eng & Min J 99:850-3 Ap 10 '15  
 Crushing plant of the Ohio copper co.'s mill. R. S. Lewis. II Eng & Min J 99:748-50 Ap 24 '15  
 Design of modern copper plants. C. H. Repath. Met & Chem Eng 13:660-1 O 1 '15  
 Designing small copper smelting plants. C. C. Christensen. II Eng & Min J 99:225-8 Ja 30 '15  
 Development of ore concentration. II: A. Marvin. II Eng & Min J 99:218-30 My '15  
 Electrolysis of copper sulphate liquor, using carbon anodes. L. Addicks. II Eng & Min J 99:748-55 O 15 '15  
 Electrolytic copper refining; abstracts of papers by A. C. Clark and L. Addicks. Met & Chem Eng 13:661-3 O 1 '15  
 Equipment of Arizona smelters. J. Douglas. Met & Chem Eng 13:904 D 1 '15  
 Flotation at the Consolidated Arizona smelting co., Humboldt, Arizona. flow sheet Met & Chem Eng 13:807-801 D 1 '15  
 Hybnette leaching process for copper ores. Eng & Min J 100:803 O 9 '15  
 Hydro-electrolytic treatment of copper ores. R. L. Goodrich. II Am Inst Min B Bul 104:1551-94 Ag '15; Abstract. Met & Chem Eng 13:766 O 15 '15

- Hydrometallurgical treatment of Michigan copper tailings. R. D. Lohak. plan Met & Chem Eng 13:233-4 Ap '15  
 Improvements at the reduction works of the Anaconda company. F. Laist. Eng & Min J 99:418-19 F 27 '15  
 Improvements in electrolytic copper refining; patent granted to R. L. Pyne and H. M. Green. Eng & Min J 13:816 N 1 '15  
 Laist roasting patents. Eng & Min J 99:232-4 F 6 '15  
 Leaching at the Calumet & Hecla. Eng & Min J 99:821 My 8 '15  
 Leaching copper with ammoniacal solutions. Met & Chem Eng 13:449-51 Jl '15  
 Leaching experiments on the Ajo area. S. Crossdale. Am Inst Min B Bul 92:1881-1929 Ag '14; Abstract. Met & Chem Eng 12:591-3 S '14; Excerpt (Leaching-plant construction). Eng & Min J 98:981-3 N 28 '14; Excerpt (Manufacture of sponge iron as a precipitant for copper). Eng & Min J 99:326-8 F 13 '15; Excerpt (Leaching-plant operation). Eng & Min J 99:576-6 Mr 27 '15; Excerpts. Eng & Min J 99:1098-9, 1139-40 D 10-26 '14  
 Metal loss in copper slags. F. E. Latho. Eng & Min J 100:216-17, 263-8, 305-8 Ag 7-21 '15  
 Metallurgy of copper in 1914. L. Addicks. Eng & Min J 99:291-5 Ja 9 '15  
 New copper metallurgy. H. A. McGraw. II Eng & Min J 48:675-88 F '15  
 Nodulizing in copper metallurgy. J. H. Payne. Eng & Min J 99:272-4 F 6 '15  
 Precipitating plant at the Copper Queen mines. C. M. Coats and G. L. Allen. II Eng & Min J 99:17-19 Ja 2 '15  
 Present tendencies in copper metallurgy. R. P. Mathewson. Met & Chem Eng 13:141 Mr '15  
 Problems in copper leaching; discussion. Am Inst Min B Bul 100:711-37 Ap '15; Discussion. 100:2459-60 D 1 '15  
 Progress in copper metallurgy in the Globe district, Arizona. L. O. Howard. Met & Chem Eng 13:659 O 1 '15  
 Reverberatory smelting practice of Nevada consolidated copper co. Met & Chem Eng 13:681-2 O 1 '15  
 Reverberatory smelting practice of Nevada consolidated copper co. II. E. H. Pomeroy. Eng & Min J 99:445-53 F '15; Abstract. Met & Chem Eng 13:252-4 Ap '15  
 Roasting and leaching concentrator slimes tailings. L. Addicks. II flow sheet Am Inst Min B Bul 104:1471-81 Ag '15; Same. Met & Chem Eng 13:531-5 S 1 '15; Discussion. Am Inst Min B Bul 104:2160-1 D 1 '15  
 Salsda smelter. F. D. Weeks. Am Inst Min B Bul 104:1691-5 Ag '15  
 Shaft-rockhouse practice in the copper country. L. H. Goodwin. II Eng & Min J 99:1061-6, 1107-10, 100:7-12, 53-7 Jo 19-Jl 10 '15  
 Smelting at Pampulilla, Chile. II Eng & Min J 100:787-9 N 13 '15  
 Smelting of copper ores in the electric furnace. B. A. Lyon and R. M. Keeney. Eng & Min J 99:81-176 F '15; Conclusion. Met Am B 80:139 Ag 28 '15  
 Solution control in ferric-chloride leaching of sulphide copper ores. F. N. Flynn and R. H. Hatchett. Met & Chem Eng 13:291 My '15  
 Solution stratification as an aid in the purification of electrolytes. F. L. Pyne. Eng & Min J 99:895-6 D 1 '15  
 Van Arsdale's method of copper-ore treatment. Eng & Min J 100:91-2 Jl 10 '15  
 Weidlein's copper process. Met & Chem Eng 13:652 O 1 '15

**Copper mines and mining**

- Cloncurry copper district, Queensland. W. H. Corbould. Eng & Min J 99:189-20 Ja 23 '15  
 Copper Creek district of Arizona. C. Hafer. II Eng & Min J 98:1145 D 26 '14  
 Copper discovery in Norway. A. D. Udhany. Eng & Min J 99:322 F 13 '15  
 Corocoro copper district of Bolivia. F. A. Sundt. Eng & Min J 99:189-20 Ja 23 '15  
 Drilling campaign of the Consolidated copper-mines co. plan Eng & Min J 99:1069-71 Jo 19 '15

**Copper mines and mining—Continued**

- Early history of Braden mines, Sewell, Chlie. W. Braden. *Il Eng & Min J* 100:389-91, 398-9 S 4 '15
- Mining camp without a peer: revolutionary methods at Bingham, Utah. G. F. Stratton. *Il Sci Am S* 80:241-4 O 15 '15
- Mining low grade copper ore by Itay Consolidated. A. N. Penny. *diags Eng & Min J* 99:767-70 My 1 '15
- Mining methods at Braden. H. R. Graham. *Eng & Min J* 100:831-3 N 20 '15
- Mining methods of the Arizona copper co. P. B. Scotland. *diags plans Am Inst Min E Bul* 98:483-98 F '15
- Starting of White Mine operations. *Eng & Min J* 99:523 Ap 3 '15
- Table showing minimum grade of copper ore and profits. F. W. Foote. *Eng & Min J* 100:882 N 27 '15
- Training and hoisting at Copper Queen mine. G. F. G. Sherman. *Il diags Am Inst Min E Bul* 105:1837-85 S '15
- Two old Appalachian copper mines. J. W. Mason. *Il Eng & Min J* 99:746 Ap 24 '15
- Underground mining systems of Ray consolidated copper co. L. A. Blackner. *Il diags Am Inst Min E Bul* 102:1249-50 Jo '15
- Ventilation of the Copper Queen mine. C. A. Mitke. *diags Am Inst Min E Bul* 105:1941-58 S '15; Discussion. 108:2477-8 D '15

**Copper ores**

- Copper deposits of San Cristobal, Santo Domingo. T. F. Donnelly. *bibliog Il Am Inst Min E Bul* 104:1759-68 Ag '15; Discussion. 108:2473-4 D '15
- Disseminated copper ores of Bingham Canyon, Utah. J. J. Beeson. *Il diags Am Inst Min E Bul* 107:2191-2236 N '15
- Economic geology of the Belgian Congo, Central Africa. S. H. Hall and M. K. Shaler. *Il Econ Geol* 9:617-33 O '14; Excerpts. *Eng & Min J* 99:608-11 Ap 3 '15
- Geology of the Burro mountains copper district, New Mexico. R. E. Somers. *Il maps Am Inst Min E Bul* 101:957-96 My '15; Discussion. 108:2476 D '15
- Porphyry coppers. P. G. Barbour. *Eng & Min J* 99:1111-12 Jo 26 '15
- See also Chalcocite

**Copper plating**

- Control of brass and copper plating solutions. A. D. Cowperthwaite. *Metal Ind n s* 18:68-9 F '15
- Copper cyanide plating solutions. M. C. Weber. *Metal Ind n s* 13:95-6 Mr '15; Same. *Met & Chem Eng* 13:265-6 Ap '15; Same. *Foundry* 43:197-8 My '15; Same. *Metal Am S* 79:303 My 8 '15
- Copper plating as used for purposes other than ornamental. H. G. Loverink. *Metal Ind n s* 18:488-9 N '15
- Determining weight of deposit. L. C. Wilson. *Metal Ind n s* 18:152-4, 277-8 Ap, Ji '15
- Economy and efficiency of copper cyanide. C. H. Proctor. *Foundry* 43:199-200 My '15
- Protecting silvered mirrors by copper plating. *Il diag Sci Am S* 79:28 Ja 9 '15

**Copper salts**

- Cuprous salts of oxygen acids and a new method for preparing cuprous salts. L. C. Daniels. *Am Chem Soc J* 97:1187-71 My '15

**Copper sulphate**

- New method for the preparation of copper sulphate. *Eng & Min J* 100:190 Ji 31 '15
- Use of copper sulfate in the purification of swimming pools. S. J. Thomas. *J Ind & Eng Chem* 7:496-9 Jo '15

**Copper sulphide**

- Determination of cuprous and cupric sulfide in mixtures of one another. M. Poshjak. *Am Chem Soc J* 86:2475-8 D '14
- Sulphides of copper. E. Poshjak, H. T. Allen and H. E. Merwin. *Econ Geol* 10:491-535 S '15

**Copper ware**

- Method of retinning copper ware. H. F. Munro. *Metal Work* 23:474 Mr 26 '15

**Copy. See Manuscripts, Preparation of****Core making machines. See Foundry machinery****Cork**

- Carborundum and cork exhibits at the Panama-Pacific international exposition. *Il Met & Chem Eng* 13:459-60 Ji '15

**Corliss engines. See Steam engines****Corn**

- Lye hulling of corn for hominy. J. W. Marden and J. A. Montgomery. *J Ind & Eng Chem* 7:860-3 O '15
- Occurrence of methyl alcohol in corn silage. E. B. Hart and A. R. Lamb. *Am Chem Soc J* 36:2114-18 O '14

**Corn meal**

- Composition of corn (maize) meal manufactured by different processes and the influence of composition on the keeping qualities. A. J. Winton, W. C. Burnet and J. H. Bornmann. *U S Agric Bul* 215:1-31 '15

**Corn products**

- Contributions of the chemist to the corn products industry. B. T. Bedford. *J Ind & Eng Chem* 7:276-6 Ap '15

**Corncribs**

- Concrete block cornerrib. *Il Concrete Cem* 7:86-7 Ag '15

**Cornell university, Sibley college**

- Beginnings of Sibley college at Cornell. A. D. White. *Sibley J* 29:300-14 Jo '15
- Growth of the Sibley college curriculum since 1868. H. Diederichs. *Sibley J* 29:331-42 Jo '15

**Cornices**

- Cantilever-framed cornice. *Il diag Eng N* 74:1061 D 2 '15
- Ornamental tile in cornice work. *Il Bldg Age* 37:39-41 Jo '15

**Corona**

- Comparison of calculated and measured corona loss curves. E. W. Peck, Jr. *Am Inst E E Pro* 34:169-70 F '15; Discussion. 34:2620-1 N '15
- Electric strength of air. J. I. Whitehead. *Am Inst E E Pro* 34:353-65 My '15; Discussion. 34:2997-3005 D '15
- Investigation of the corona in air at continuous potentials and at pressures lower than atmospheric; abstract. D. MacKenzie. *Elec W* 65:1303 My 22 '15
- Law of corona and spark-over in oil. F. W. Peck, Jr. *Gen Elec* 18:821-7 Ag '15

**Corporation law**

- Corporations and trading associations in France. A. J. Wolfe and M. M. Borchard. *U S Bur For & Com Com* 97:69-84 '15
- See also Commercial law; Municipal law; Public service corporations—Law; Railroad law; Trusts, industrial

**Corporation schools**

- Apprentice school. A. W. Soderberg. *Iron Tr R* 56:1169-70 Jo 10 '15
- Cleveland-Cliffs mining school. *Iron Age* 96:978 O 28 '15
- Individual and corporate development of industry. C. P. Steinmetz. *Gen Elec* 18:813-16 Ag '15
- Modern railway school. *Il plans Elec Ry J* 46:844-53 Ag 28 '15
- Teaching the business to the employee. *Elec W* 66:291-3 Ag 7 '15
- Training men for the central-station industry. *Il Elec W* 66:982-4, 1142-4 O 30, N 20 '15
- Works apprentice school discontinued. *Iron Age* 95:1234-5 Jo 17 '15
- Works school for salesmen. C. R. Sturtevant. *Iron Age* 95:1253 Jo 17 '15

**Corporation schools, National association of. See National association of corporation schools****Corporations**

- Cumulative voting. *Elec Ry J* 46:870-1 O 23 '15
- Individual and corporate development of industry. C. P. Steinmetz. *Gen Elec* 18:813-16 Ag '15
- Small corporation—a pitfall. J. R. Smith. *Eng M* 49:872-8 Ag '15
- See also Franchises; Holding companies; Public service corporations

**Accounting**

- Bonus capital stock and bonds. W. P. Hilton. *J Account* 19:425-36 Jo '15



- Corporations—Accounting—Continued**  
 Issuance of securities in New York. J  
 Account 19:212-15 Mr '15
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 Overissuing capital stock. J Account 19:62-5  
 Ja '15
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 Machine that takes off fat. II Sci Am 112:  
 360 Ap 17 '15
- Correspondence schools and courses**  
 Teaching foundry practice by mail. II Foundry  
 43:65-8 F '15
- Corrosion, Electrolytic. See Electrolytic corrosion**
- Corrosion and anti-corrosives**  
 Acid-resisting alloy to replace platinum in the  
 construction of a bomb calorimeter. S. W.  
 Parr. II Am Chem Soc J 37:2615-22 N '15  
 Apparatus for making accelerated comparative  
 durability tests of small pipe. II Eng &  
 Contr 43:582-3 Je 30 '15; Eng N 74:35-51 J 1 '15  
 Care and maintenance of gas holders. J. H.  
 Braine. II Am Gas Inst Pro 9:pt 1, 764-96  
 '14; Same cond. Am Gas Light J 101:355-9 D  
 7 '14  
 Chemical principles in the protection of iron  
 against rust. Automobile 32:812-1. My 6 '15  
 Corrosibility of cast iron and steel. J. N.  
 Friend and C. W. Marshall. Iron Age 96:  
 1114-15 My 20 '15  
 Corrosion of condenser tubes. E. Bate. Gen  
 Elec R 17:882-90 N '14; Abstract. Met &  
 Chem Eng 12:656-7 O '14; Abstract. Ind Eng  
 14:213-14 O '14  
 Corrosion of condenser tubes. Power 41:355 Mr  
 9 '15  
 Corrosion of iron. L. C. Wilson. Eng M 48:517-  
 23, 607-74, 849-58; 49:58-66, 202-10 Ja-My '15  
 Corrosion of iron and steel pipe. W. A. Bunk-  
 ley, J. B. Noble. Power 41:584-6 Ap 27 '15  
 Corrosion of iron pans in zinc melting. Eng &  
 Min J 100:478 N 18 '15  
 Corrosion of pure iron and steels used by  
 U. S. reclamation service. Eng N 74:78 J 1 8  
 '15  
 Corrosion of steel and cast iron compared.  
 R. C. McWane and H. Y. Carmon. II Foundry  
 43:467-9 N '15  
 Corrosion of steel wharves at Kowloon; ab-  
 stract. M. H. Mills. diags Am Soc M E J 37:  
 123-4 F '15  
 Corrosion problem before the American iron  
 and steel institute. Met & Chem Eng 13:420  
 J 1 '15  
 Deterioration of steel bridges over railway  
 tracks at Buffalo. R. J. Reidpath. II diags  
 Eng N 73:1144-7 Je 10 '15  
 Developing an acid-resisting alloy. S. W.  
 Parr. II Iron Tr R 67:991-1. N 18 '15; Same.  
 Metal Ind n s 13:467-8 N '15; Abstract. Am  
 Soc M E J 37:856-7 N '15; Abstract. Met &  
 Chem Eng 13:978 D 15 '15  
 Effect of various elements in steel on its  
 resistance to corrosion. A. S. Cushman. Eng  
 & Contr 44:84-5 J 1 28 '15  
 Effects of pickling upon the corrosion of iron.  
 H. A. Richardson. Met & Chem Eng 12:769  
 D '14; Same. Iron Age 95:621 Mr 18 '15  
 External corrosion of cast iron pipe; abstracts.  
 M. R. Pugh. Munic J 37:484-5 N 24 '14; Am  
 Soc M E J 37:9109 O '14; Eng & Contr 42:  
 277-81 O 21 '14; Am Gas Light J 103:65-70  
 Ag 2 '15  
 Influence of different elements on the corro-  
 sion of iron. L. C. Wilson. Eng M 50:78-88  
 O '15  
 Old steel of razed building examined for rust.  
 Eng Rec 72:223-4 Ag 21 '15  
 Protection of metal structures; with discus-  
 sion F. H. Kay. II diags Eng Soc W P's 31:  
 115-23 Mr '15  
 Protection of metals against electrolysis,  
 weathering, chemical fumes, etc. M. Toch.  
 II Shiley J 30:54-5 N '15
- Recent progress in corrosion resistance. D. M.  
 Buck. II Iron Age 95:1231-4 Je 3 '15; Same.  
 Eng & Contr 43:574-6 Je 30 '15; Same. Iron  
 Tr R 56:1155-8 Je 10 '15; Same. Metal Work  
 83:879-82 Je 18 '15; Excerpt (Copper steel  
 for resisting corrosion) Eng M 49:762-3 Ag  
 '15; Discussion. A. S. Cushman and others.  
 Iron Age 95:1234-9 Je 8 '15; Same. Iron Tr R  
 56:1159-63+ Je 10 '15; Same abr. Metal Work  
 83:882-3 Je 18 '15**
- Removal of rust by chemicals. Eng & Min J  
 100:73-4 J 10 '15  
 Rust removal by chemical reagents. J. N.  
 Friend and C. W. Marshall. Iron Tr R 56:  
 1023-4 My 20 '15  
 Why iron and steel corrodes. J. Aston. Iron  
 Tr R 56:423-6 F 25 '15  
 Wrought-iron or steel pipes? L. C. Wilson.  
 Eng M 50:247-54 N '15  
*See also* Boilers—Corrosion; Electrodes;  
 Electrolytic corrosion; Metal protection;  
 Paint; Waterproofing**
- Bibliography**  
 Bibliography of metal corrosion and protec-  
 tion. Eng Soc W P's 31:193-222 Mr '15
- Corrugated iron**  
 Corrugated pipe used successfully for cul-  
 verts. II Eng Rec 71:558 My 1 '15  
 Service secured from corrugated iron culverts.  
 II Ry Age 58:316-18 F 10 '15
- Corte-scope**  
 Machinery photograph display device. II Iron  
 Age 95:1236-6 Jo 10 '15
- Corundum**  
*See also* Abrasives.
- Cosmology**  
 Modern ideas on the end of the world. G. Jau-  
 mann. Sci Am 8 79:178-9 Mr 20 '15
- Cost**  
 Analysis of elements of cost of a complete  
 plant unit. W. J. Huddle. Eng & Contr 44:  
 139-40 Ag 25 '15  
*See also* Prices; and subdivision Cost un-  
 der number of subjects
- Cost accounting**  
 Accounting for depreciation. J. R. Cravath.  
 Elec W 65:213-14 Ja 23 '15  
 Accounting system for roofing business. E. B.  
 Bourlier. Metal Work 83:39-42 Ja 1 '15  
 Accounts for material on engineering con-  
 struction. L. H. Allen. J Account 19:352-8  
 My '15  
 All-in costs. M. T. Gilbourne. Engineer 120:  
 101 J 1 30 '15  
 American foundrymen's association committee  
 recommends universal cost keeping system.  
 Foundry 43:461-4 N '15  
 Apportioning indirect production expense.  
 A. M. Burroughs. Metal Work 83:281-6, 316-  
 18 F 19-25 '15  
 Bookkeeping and cost-keeping for electrical  
 contractors. L. W. Moxey, Jr. Elec W 66:  
 1153-5 N 30 '15  
 Buildings-factor costs. H. L. Green. Eng M  
 48:407-10 J 1 '14; Same. Eng & Contr 43:101-2  
 F 3 '15  
 Business methods for the plumber and fitter.  
 W. A. Fink. Iron Eng 71:185-6 My 15 '15  
 Contractors' cost-keeping system. Elec W 65:  
 797-9 Mr 27 '15  
 Cost accounting for fertilizer manufacturers.  
 F. C. Bolser. J Account 19:166-81 Mr '15  
 Cost accounting in plumbing establishments.  
 H. G. Holstrom. Metal Work 83:63-4 Ja 1 '15  
 Cost accounting in sheet metal work. R. M.  
 Mackey. Metal Work 83:314-15 N 26 '15  
 Cost accounting in the main works of the  
 Westinghouse electric & manufacturing  
 company. G. D. Piper. Elec Ry J 44:1337-40  
 D 18 '14  
 Cost accounting in the railroad repair shop.  
 E. Cordale. Eng M 49:211-17 My '15  
 Cost accounting on construction work, with a  
 description of the system used by the Aber-  
 thaw construction company. L. H. Allen.  
 forms Boston Soc C E J 1:153-77 Mr '14;  
 Discussion. 1:456-79 O '14
- Cost and method. R. Daniels. See monthly  
 numbers of the Inland printer**
- Cost keeping in the brass foundry. C. O.  
 Skeeper. Metal Ind n s 12:497-9 D '14**
- Cost keeping system for work performed by  
 municipal forces of the Philadelphia bureau  
 of highways. Eng & Contr 43:292-4 Mr 31  
 '15; Same cond. Eng Rec 71:360-1 Mr 30 '15**
- Cost keeping system Oregon state highway  
 commission. M. F. Ayres. Eng & Contr 44:  
 349-50 N 3 '15**
- Cost of breakage and leakage. S. Walton. J  
 Account 19:148-52 F '15**

**Cost accounting—Continued**

- Cost of doing business. (3: W. Hill. Dom Eng 71:187, 306-7 My 8 Je 12 '15)
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- Cost system for contractor or jobber. Metal Work 83:599-600+ Ap 23 '15
- Cost system of Denver combination shop. J. R. Elliott. Metal Work 84:274-8 Ag 27 '15
- Cost system of Denver sheet metal shop. Metal Work 84:176-6+ Ag 6 '15
- Cost system of Michigan sheet metal shop. Metal Work 83:802-4 Jo 4 '15
- Cutting the costs of keeping a cost system. A. M. Burroughs. Metal Work 83:763 My 28 '15
- Depreciation, interest and manufacturing cost. W. C. Wright. J Account 20:361-4 N '15
- Development of a unit cost system. N. Cunliff. II Assn Eng Soc J 53:74-85 Ag '14; Same. Eng & Contr 42:374-6 O 21 '14; Discussion. Assn Eng Soc J 53:85-101, 185-70 Ag-S '14
- Do you estimate or guess in bidding? W. Stern. Metal Work 83:44-5 Ja 1 '15
- Doing business on low overhead expense; W. B. Perry electric company, of Brooklyn. Elec W 65:544-6 F 27 '15
- Estimating the cost of wool goods in English mills. Textile World 49:419-24 Ji '15
- Factory cost accounting. M. McKune. Metal Ind n 13:286-7 Ji '15
- Figuring cost on labor percentage basis. Metal Work 83:12-13 Ja 1 '15
- Final disposition of expense figures. A. M. Burroughs. Metal Work 83:471-2 Mr 26 '15
- Finding costs in the steel foundry. G. Muntz. Iron Tr R 57:482-4 S 9 '15
- Guide posts in the contracting business. J. C. Walker. Metal Work 83:607-9 Ap 23 '15
- Handling material and perpetual inventory. A. M. Burroughs. Metal Work 83:153-4 Ja 22 '15
- How the contractor can know where he stands. L. W. Moxey, Jr. Elec W 66:870-3 O 16 '15
- How to estimate cost and keep accounts. J. P. Coghill. Elec W 66:818 O 9 '15
- How to use statistics in management. F. G. Coburn. Eng M 49:720-3 Ag '15
- Jobbing machine shop cost system. II Iron Age 96:863-5 O 14 '15
- Keeping a line on daily expense. A. J. Gibney. Ry R 57:468-70 O 9 '15
- Keeping accurate daily and total cost sheets will pay the contractor. C. B. Montgomery. Eng Rec 71:535-6 Ap 24 '15
- Keeping cost in a job planing shop. II. J. Ter Doest. Metal Ind n 13:189 My '15
- Labor costs in interior construction. L. W. Moxey, Jr. Elec W 66:924-7 O 23 '15
- Machine accounting in a pump works; Hollerith tabulating system. S. G. Keon. II Iron Age 96:408-11 Ag 10 '15
- Making the cost department worth while. W. Kent. Ind Eng 14:393-5 O '14
- Manufacturing expense distribution. N. T. Ficker. Eng M 49:321-6, 555-9, 690-7, 862-71; 50:58-64, 254-61, 390-400 Jo-J '15
- Measurement of efficiency. II. L. Gantt. Iron Tr R 55:1131-3 D 17 '14; Same. Ind Eng 14: 463-5 D '14; Same. Iron Age 94:1320-1 D 3 '14; Same. Automobile 31:1104-5 D 17 '14; Same cond. Ry Age (Mech ed) 89:249-51 My '15; Same cond. Metal Work 83:725-6 My 21 '15; Abstract. Eng M 48:577-80 Ja '15; Abstract with discussion. Am Soc M 19 J 37: 11-13 Ja '15
- 1914 operations of the Philadelphia bureau of highways and street cleaning. II Good Roads n 9:131-5 Ap 3 '15
- Overburdening the overhead expense. H. Whitehead. Dom Eng 72:317-18 S 11 '15
- Practical cost system for combination shop. Metal Work 84:306, 340+, 361+ S 3-17 '15
- Relation between production and costs. H. L. Gantt. Am Soc M 19 J 37:468-8 Ag '15; Same. Am Gas Light J 108:64-5 Ji 26 '15; Same. Iron Age 96:16-18 Ji 1 '15; Same. Iron Tr R 57:267-8+ Ag 5 '15; Same. Mach 21:1000-2 Ag '15; Same. Textile World 49:510-12 Ag '15; Discussion. Am Soc M 19 J 37:468-75 Ag '15; Abstract of discussion. Iron Age 96:24-5 Ji 1 '15
- Road-maintenance costkeeping in Pennsylvania. Eng N 74:250-3 Ag 5 '15

- Uniform basis for figuring foundry costs. Iron Age 96:1118-21 N 11 '15
- Unit construction costs from the new smelter of the Arizona copper co., ltd. E. H. Jones. diags Am Inst Min E Bul 91:1497-1640 Ji '14; Abstract. Eng & Contr 42:560-3 D 16 '14
- Unit costs for day before obtained on this job by 8:30 A. M. Eng Rec 71:785-6 Je 19 '15
- Value of published costs. W. K. Palmer. Elec Ry J 45:845-6 My 1 '15
- What is the cost per thousand? B. Daniels. Inland Ptr 54:393-6 D '14

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- Attractive English cottage. diag plan Bldg Age 37:59 Ap '15
- Cottage of the semi-bungalow type. II diags plans Bldg Age 37:49-52 Ja '15
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- See also Architecture, Domestic; Bungalows; Country houses

**Cotton**

- Chemical engineering in nitrocellulose manufacture. H. J. Stadelman. Met & Chem Eng 13:361-6 Je '15
- Chinese cotton industry. R. A. Morgan. Textile World 50:187-9 N '15
- Further results of moisture tests on American cotton at the Havre conditioning house. D. B. Douty. Textile World 49:230-2 My '15
- Methods of determining length of cotton staple and illustrations of their application. N. A. Cobb. Textile World 49:613-18 S '15
- Moisture in cotton. Textile World 48:405-6 Ja '15
- Use of cotton for the production of explosives. Sci Am S 80:271 O 23 '15
- See also Cotton mills; Dyes and dyeing; Textile industry and fabrics
- Cotton, Absorbent**
- Machines for preparing absorbent cotton. II Textile World 48:350-1 D '14
- Preparing absorbent cotton. II Textile World 48:533-5 F '15
- Cotton, Absorbent, Substitutes for**
- Continental substitutes for absorbent cotton. Textile World 50:74-5 O '15
- Cotton as contraband of war**
- Cotton as contraband. Textile World 49:587-9 S '15
- Greatest technical blunder of the war. Sci Am 113:176 Ag 28 '15
- War significance of cotton. Sci Am 113:38 Ji 10 '15

**Cotton carding**

- Experience in a cotton card room. Textile World 49:561-2 S '15

**Cotton fabrics**

- Breaking strength of cotton cloth. D. B. Douty. Textile World 49:171-2 My '15
- Cotton fabrics for aeroplanes and dirigibles. Textile World 49:325 Je '15
- Faulty fabrics as viewed by the laundryman. W. H. Johnstone. Sci Am S 80:359 D 4 '15
- Novelties in cotton fabrics. II Textile World 49:76-7, 342-6 Ap, Jo '15
- Putting up goods to suit buyers. Textile World 48:630-1 Mr '15

**Cotton fibers**

- Length of the cotton staple. Textile World 50: 155-6 N '15

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Handling cotton with electric freight trucks at Galveston. *Il Int Marine Eng 20:103-4 Mr 15*
- Cotton machinery**  
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Electricity in cotton gins. *J. H. Moseley. Il Elec R & W Elec'n 67:139-45 JI 24 '15*  
Machines for preparing absorbent cotton. *Il Textile World 48:350-1 D '14*  
Preparing absorbent cotton. *Il Textile World 48:533-5 P '15*
- Cotton manufacture**  
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Utilization of cotton waste by German and Austrian methods. *F. Nasmith. Textile World 49:sup251+ My '15*
- Cotton manufacturers, National association of.**  
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- Cotton mills**  
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Electricity in cotton duck mills. *Il Elec R & W Elec'n 66:673-9 Ap 10 '15*  
General business efficiency in connection with cotton mill management. *J. T. Rose. Textile World 49:190-3 My '15*  
Humanitarian millwork in Greensboro, N. C. *G. Dawe. Il Am Ind 15:16-17 My '15*  
Meeting of the Southern textile association; president's address. *W. M. Sherard. Textile World 50:162-4 N '15*  
Piece rate system for wages in cotton mills. *O. Wilson. Textile World 49:213-17 My '15*  
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Salem cotton mill to use central-station power. *Il Elec R & W Elec'n 67:511 S 18 '15*  
Uses for concrete construction by cotton manufacturers. *L. C. Winsor. Textile World 49:288-91 My '15*
- Cotton pulp**  
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- Cotton sizing**  
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- Cotton spinning**  
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- Cotton tariff**  
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- Cotton trade**  
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Italian cotton industry since the European war. *R. Sansone. Textile World 49:501-3 Ag '15*  
Limitations on association activities in developing export trade. *P. T. Cherington. Textile World 49:217-19 My '15*  
Marketing cotton goods in India. *Textile World 48:374-8 Ja '15*  
Scientific solution of the world's cotton problem. *L. Johnson. Sci Am 113:297-4 O 2 '15*
- Trade abuses and a remedy; need of organization. *K. R. Hooker. Textile World 49:193-7 My '15*
- Cotton waste**  
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Utilization of cotton waste by German and Austrian methods. *F. Nasmith. Textile World 49:sup251+ My '15*
- Cotton weaving**  
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- Cottonseed**  
Cottonseed industry in foreign countries. *T. H. Norton. Il U S Bur For & Dom Com 99:1-73 '15*  
Heating of cottonseed—its causes and prevention. *W. R. Burrow. J Ind & Eng Chem 7:709-12 Ag '15*  
Nitrogen and fat in short staple cottonseed. *C. A. Wells and P. H. Smith. J Ind & Eng Chem 7:217 Mr '15*  
Pressure of cottonseed. *W. M. Millot. Eng N 74:291-2 N 18 '15*
- Cottonseed meal**  
Determination of lint in cottonseed-meal. *Il N. Brickett. J Ind & Eng Chem 7:611-12 JI '15*  
Official method for determining crude fiber as applied to cottonseed meal. *C. K. Francis. Il J Ind & Eng Chem 7:676-80 Ag '15*  
Preparation of raffinose. *C. S. Hudson and T. S. Harding. Am Chem Soc J 36:2110-14 O '14*
- Cottonseed oil**  
Contributions of the chemist to the cottonseed oil industry. *D. Wesson. J Ind & Eng Chem 7:276-7 Ap '15; Abstract. Met & Chem Eng 13:283-4 My '15*
- Cottonseed oil mills**  
Electric drive in a cottonseed-oil mill. *J. W. Ruff. Elec W 66:978-9 O 30 '15*
- Cottrell, Frederick Gardner, 1877-**  
Dinner to Frederick G. Cottrell. *por Met & Chem Eng 13:281-4 P '15*
- Cottrell process.** See Electric precipitation
- Coulometer.** See Voltameters
- Coumarin**  
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- Council Bluffs, Iowa**  
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**Court houses**

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**Court rooms**

Relation of light to the proof of documents; proper illumination of courts necessary to insure justice. *A. S. Osborn. Sci Am S* 78:250-1 O 17 '14; *Same. Illum Eng Soc* 9:998-1006; *Discussion. 9:1006-10 no 9 '14*

**Courtesy**

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 Making courtesy work for you. *Ironless Age* 34:313-14 Ag 26 '14  
 Personal element in the plumbing business. *G. D. Crain, Jr. Dom Eng* 73:75-6 O 16 '15

**Covellite**

Occurrence of covellite at Butte, Mont. *A. P. Thompson. Il Am Inst Min & Bul* 100:645-77 Ap '15; *Discussion. 108:2464-71 D '15*  
 Sulphides of copper. *W. Pownall, M. T. Allen and H. L. Merwin. Econ Geol* 10:527-32 S '15

**Cover pages**

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 Giant German and Austrian cranes required in navy yards for placing turrets, guns and machinery. *F. C. Perkins. Il Sci Am S* 80:145, 148 S 4 '15

**Handling materials in manufacturing plants.**

*R. L. Streeter. Il diag Eng M* 50:222-46, 401-23 N-D '15  
 Laying rail with the help of locomotive cranes. *Il Ry Age* 59:353-4 Ag 20 '15  
 Light traveler cheapens sheeting of trench across river. *W. E. Brotherton. plan Eng Rec* 71:439 Ap 3 '15  
 Locomotive crane of heavy construction. *Il Iron Age* 94:1488 D 31 '14  
 Locomotive cranes; committee report. *Il Ity R* 57:519-23 O 23 '15; *Same cond. Ity Age* 59:753-4 O 22 '15  
 Locomotive cranes for Franco. *Il Iron Age* 96:980-1 O 28 '15  
 Long 15-ton guy derrick folds into compact form. *diag Eng Rec* 72:532-3 O 20 '15  
 Long span coal-handling gantry crane. *Il Iron Age* 96:236 J1 29 '15  
 Machinery hall cranes, Panama exposition. *Il Iron Age* 91:1333 D 10 '14  
 New 150-ton revolving floating crane for Norfolk. *A. F. Chas. diag Eng N* 73:1164-5 Je 17 '15; *Abstract. Eng M* 49:138 Ag '15  
 Panama crane contract. *P. H. Cooke. Il diag Eng N* 73:913-17 My 13 '15  
 Pillar crane for machine tool work. *diag Ry Age (Mech ed)* 89:360 J1 '15  
 Portable crane for handling transformers. *Il Elec W* 66:1091-3 N 13 '15  
 Portable derrick for installation on motor trucks. *Concrete Cem* 6:108 F '15  
 Proposed gantry crane for car repair yards. *W. E. Johnston. plant Ry Age (Mech ed)* 89:304 Je '15  
 Special type of slag handling crane. *Il Iron Age* 95:939 Ap 20 '15  
 Standardization of chilled iron crane wheels; abstracts. *R. K. Vial. diag Am Soc M* 19 J 37:147-51 Mr '15; *Iron Tr R* 55:1083-7+ D 10 '14  
 Standardization of crane motors. *Ry Age (Mech ed)* 89:585 N '15  
 Triction wheel locomotive crane. *Il Eng & Contr* 44:55 J1 21 '15  
 Use of locomotive cranes and some data on their cost of operation. *Eng & Contr* 44:14-16 N 24 '15  
 Use of wrecking crane saved money on small job. *Il: C. Hardman. Il Eng Rec* 72:366 S 18 '15  
 Uses of the locomotive crane in electric railway work. *G. J. Kuhrt. Il Elec Ry J* 46:877-8 O 23 '15  
 Uses of the locomotive crane in railway service. *Il Ity Age* 59:110-15 J1 16 '15  
*See also* Crane hooks; Hoisting machinery

**Accidents**

Crane and chain accidents: abstract. *Ind Eng* 14:411-12 O '14  
 Making the operation of the overhead crane safe. *Ind Eng* 14:434-8 N '14

**Failures**

Failure of Panama crane Ajax. *F. H. Cooke. Il diag Eng N* 73:918-23 My 13 '15; *Abstract. Eng M* 49:544-7 J1 '15  
 Failure of the great German crane of the Panama canal. *Eng N* 73:947-8 My 13 '15  
 How a German crane failed. *Il Iron Tr R* 56:274-6 F 4 '15  
 Struck in the Panama canal cranes. *Eng N* 74:86-8 J1 8 '15

**Safety devices**

Derrick dangers. *Eng & Min J* 99:904 My 22 '15  
 Fifty safety rules for the operation of cranes. *Foundry* 43:16-17 Ja '15; *Same. Eng & Min J* 99:779-80 My 1 '15  
 Making the operation of the overhead crane safe. *Ind Eng* 14:434-8 N '14  
 Rules for crannemen. *Am Ind* 16:28-9 Ag '15  
 Safeguarding cranes. *Iron Age* 95:403 F 18 '15  
 Safeguarding of cranes. *Il Am Ind* 16:suppl-4 N '15  
 Safety in crane chains. *M. B. Morgan. Iron Age* 96:1116-17 N 11 '15

**Crankpins**

Crankpin failure. *F. F. Jorgensen. Il diag Power* 41:720-1 My 25 '15  
 Crankpin troubles. *C. W. Haynes. Power* 41:120-1 Ja 28 '15

**Crankshafts**

- Alignment of outer bearings. J. Reid. *Il Power* 42:726-7 N 23 '15  
 Broken crankshafts. A. V. Clarke. *diag Power* 42:385 N 14 '15  
 Crankshaft for two-cycle internal combustion engines. D. O. Barrett. *Mach* 21:118-20 O '14; *Abstract. Ind Eng* 14:441 N '14  
 Ford methods and the Ford shops. H. L. Arnold. *Il Eng* M 48:704-11 F '15  
 Problems of eight-cylinder engine design. O. M. Burkhardt. *diag Horseless Age* 36:276-8 S 15 '15  
 Types of automobile crankshaft lathes. J. C. Spence. *Mach* 21:569 Mr '15  
 Types of automobile crankshaft lathes: universal machines for the crankshaft manufacturer and special equipments for the automobile builder. W. O. Strauss. *Il diag Mach* 21:400-3 Ja '15

**Craven, Alfred, 1846-**

- Sketch. *por Eng* M 50:214-15 N '15

**Cream of tartar**

- Manufacture of cream tartar. O. Best. *Met & Chem Eng* 13:613-17 S 15 '15

**Creameries**

- Summary of the results of experiments on the purification of creamery refuse and their application. H. R. Crohurst and A. D. Weston. *Eng & Contr* 44:7-9 JI 7 '15

**Creatinine**

- Observations of the excretion of creatinine by women. M. Hull. *Am Chem Soc J* 36:2146-51 O '14

**Credit**

- Association and the slow pay customer. H. J. Buckley. *Metal Work* 82:746 D 4 '14  
 Banking and credit in Argentina, Brazil, Chile, and Peru. R. N. Hurley. *U S Bur For & Com* 90:1-73 '14  
 Business hints for the dealer and contractor. (I. D. Chulm, Jr. *Illec R & W Illec'n* 67:476-8 S 11 '15  
 Credit granting. C. M. Meek. *J Account* 18:427-34 D '14  
 Credit problems of tool builders. *Iron Tr R* 56:647 Ap 1 '15  
 Credit systems for plumbers and fitters. W. A. Pink. *Dom Eng* 73:9-10, 169-70, 297 O 2, N 6, D 4 '15  
 Creditor who stands for his rights. H. J. Buckley. *Metal Work* 84:823 N 13 '15  
 Credits, collections and cash discounts. W. H. Vilett. *Illec R & W Illec'n* 67:108-7 JI 17 '15  
 Credits from the viewpoint of a certified public accountant. F. H. Hurdman. *J Account* 18:435-54 D '14  
 Established credit prevents failures. F. R. Cline. *Metal Work* 83:436-7 Mr '15  
 Financial statements as a basis of credit. J. E. Masters. *J Account* 19:334-43 My '15  
 Putting collections on a banking basis. T. M. Cadey. *Metal Work* 84:548-9 O 29 '15  
 Reciprocal credit system for supply houses. J. B. Chambers. *Metal Work* 84:428-7+ O 1 '15

*See also Banks and banking; Trade acceptances*

**Crescote**

- Application of the Davis spot test in the preliminary examination of crescotes. H. Cloukey. *Il J Ind & Eng Chem* 7:928-4 N '15  
 Carboliteum and crescote. H. H. Alcock. *Am Gas Light J* 103:58-9, 125 JI 26, Ag 23 '15  
 Carboliteum and crescote. S. R. Church. *Am Gas Light J* 103:108 Ag 10 '15  
 Effect of the war on timber preservation. *Ry Age* 58:843-5 Ap 16 '15  
 Mixing tar with crescote. F. C. Reilly. *Ry R* 58:242-7 F 20 '15  
 Only crescote properly applied withstands teredo. *Eng Rec* 71:209-10 F 13 '15  
 Specification for a coal-tar crescote solution. H. Von Schrenk and A. L. Kammerer. *Eng Rec* 71:144 Ja 30 '15; *Same. Ry Age* 58:160-1 Ja 22 '15  
 Specification for a crescote-coal tar solution. *Eng Rec* 71:398 Mr 27 '15  
 Tests of wood preservatives. H. F. Weiss and C. H. Teesdale. *Il U S Agric Bul* 145:1-20 '15

- Toxicity of coal-tar crescote for the xylotrya. L. K. Shackell. *Eng Rec* 71:144 Ja 30 '15  
 Toxicity of crescote for marine borer. *Ry Age* 58:159 Ja 22 '15

**Cresosoting**

- Cresosoting of cross ties as practiced by American railroads. A. C. Steinmayer. *Il Assn Eng Soc J* 54:110-20 Mr '15  
 Effect of steaming process of cresosoting on strength of Oregon fir piling; abstracts. H. B. Macfarland. *Eng Rec* 70:487-8 O 31 '14; *Eng & Contr* 43:481-3 N 18 '14; *Summary. Eng N* 72:863 O 29 '14  
 How not to waste steam in cresosoting plants. A. M. Lockett. *Eng Rec* 71:145 Ja 30 '15  
 Tests vs. inspection of treatment of cresosoted wood paving blocks. F. W. Cherrington. *Munic Eng* 48:120-1 F '15  
*See also Wood preservation*

**Crepe**

- Bleaching and finishing crepes. *Textile World* 49:121-2 Ap '15

**Cresols**

- Preparation of some new substituted cresols. A. J. Hill and L. E. Graf. *Am Chem Soc J* 37:1839-46 Ag '15

**Cribs**

- Shell for Wilson avenue crib floated to place. *Il Eng Rec* 72:514 O 23 '15

**Cribs, Concrete**

- Concrete crib with precast members. *diag. Eng N* 73:905 My 6 '15  
 Concrete cribs used successfully in dock construction at Victoria. *Il diag plans Eng Rec* 72:165-7 Ag 7 '15  
 Concrete units for crib construction. M. D. Campbell. *Il Ry Age* 58:476-7 Mr 12 '15  
 Large reinforced-concrete cribs used for Welland ship canal entrance. R. P. Johnson. *Il diag Eng Rec* 71:458-60 Ap 10 '15  
 Reinforced-concrete floating caissons for the Welland ship canal. *Il diag Eng N* 73:1122-4 Jo 10 '15

**Cribs, Intake**

- Placing the Milwaukee waterworks intake crib. R. E. Stoefting. *Il diag Eng N* 73:1058-9 Jo 3 '15  
 Rebuilding the Omaha water-intake cribs. G. T. Prince. *Il diag Eng N* 74:342-4 Ag 19 '15

**Crime and criminals**

*See also Convict labor; Identification*

**Cripples**

- Education of invalid soldiers. A. Giradenwitz. *Il Sci Am* 113:229 S 11 '15  
 Motion study for the crippled soldier. M. B. Gilbreth. *Il Am Soc M I J* 37:669-73; *Discussion. 37:673-5 D '15*  
 Training of the war's maimed, halt and blind. *Il Sci Am* 113:401-4 N 6 '15

**Critical point**

- Determination of critical points in iron, steel and alloys. *Il diag Met & Chem Eng* 13:643-4 S 15 '15  
 Electrical resistance and critical ranges of pure iron. G. K. Burgess and L. N. Keilberg. *U S Bur Stand Bul* 11:457-70 My 10 '15  
 Locating the critical range with the Brinell ball tester. J. G. Ayers, Jr. *Mach* 21:253 D '14

**Crocker, Mrs. Emmons**

- Vice president of the American forestry association. L. Adams-Williams. *por Am For* 21:204-6 Mr '15

**Crocker land**

- Crocker land expedition. *Sci Am* 111:489 D 12 '14

**Cross-ties. See Railroad ties****Croton river**

- Long-term variations in stream flow, Croton and Hudson rivers. R. H. Margent. *Eng N* 72:1119 D 3 '14

**Crucibles**

- Device for pouring clean metal from crucibles. *Il Iron Age* 96:418 Ag 19 '15  
 Hot drawing crucible furnace. *Il Ind Eng* 14:426 N '14

**Crucibles, Graphite**

- Crucible business. J. Bartley. *Metal Ind n s* 13:14, 54-5, 107-8 Ja-Mr '15

**Crucibles, Platinum**

Study of the quality of platinum ware with special reference to losses on heating. G. K. Burgess and P. D. Salo. *diag U S Bur Stand Bul* 12:289-314 N 8 '15; Same cond. *J Ind & Eng Chem* 7:561-4 J1 '15

**Crushed stone**

Circular storage system applied to stone crushing plants. *diag Eng Rec* 73:sup53 Ag 7 '15

**Crushing**

Concentrating plant of the Moose Mountain. Ltd. B. B. Hood. *il diag Eng & Min J* 99:973-8 Je 5 '15

Crushing and grinding. T. D. Mills and M. J. Kuryla. *Met & Chem Eng* 13:781-2 O 15 '15

Crushing plant of the Ohio copper co.'s mill. R. S. Lewis. *il diag Eng & Min J* 99:748-50 Ap 24 '15

Heat developed in crushing. J. Cook. *Eng & Min J* 99:976-8 Je 5 '15; Abstract. *Met & Chem Eng* 13:190 Mr '15

Kick vs. Littinger: an experimental investigation in rock crushing, performed at Purdue university. A. O. Gates. *il diag Am Inst Min & Eng* 105:2023-61 S '15

Laws of Kick and Littinger. C. H. Stanley. *Met & Chem Eng* 13:783-4 D '14

Old storage used for overflow in enlarged rock-crushing plant on Detroit river. *il plan Eng Rec* 72:46-7 J1 10 '15

Quincy dump and grizzlies. L. H. Goodwin. *plan Eng & Min J* 100:103 J1 17 '15

Standardizing rock crushing tests. M. K. Hodgson. *Am Inst Min & Eng* 105:2053-5 S '15

Underground crushing and loading arrangements. A. B. Hall. *diag Eng & Min J* 99:192-3 Ja 23 '15

See also Crushing machinery; Gold milling; Rockhouses; Stamp mills; Tube milling

**Crushing machinery**

British Portland cement making machinery. *il diag Engineer* 119:175-7, 198-201, 246-9, 302-4, 478-80, 552-4, 626-8; 120:4-6, 196-6 J 12-26, Mr 12, 26, My 14, Jo 4, 26-J1 2, Ag 27 '15

Bronze ball gyratory crusher. *il Munic J* 38:446-7 Ap 1 '15

Chlor crushing and pulverizing mill. *il Iron Age* 96:242 J1 29 '15

Effect of increased reduction on Blake-type crushers. M. W. Heller. *Eng & Min J* 99:399-400 Fe 27 '15

Kennedy slinger type crusher. *il Iron Tr R* 57:27 J1 1 '15

Largest rock breaker. *Eng & Min J* 99:577 Mr 27 '15

Machine for reclaiming metals. *il diag Elec R & W Elec'n* 67:440-1 S 2 '15

Marcy ball mill described. *diag Eng & Min J* 100:147 J1 24 '15

Modern rock-crushing plant. P. K. Yates. *il plans Eng N* 73:582-6 Mr 25 '15

New secondary rock crusher. *diag Eng N* 73:1098 Jo 3 '15

New types of grizzlies. *il Eng & Min J* 99:241-2 Ja 30 '15

Reclaiming metals from cluder; Standard equipment company crusher. *il diag Foundry* 43:327-8 Ag '15

Shaft-rockhouse practice in the copper country. L. H. Goodwin. *plan Eng & Min J* 100:10-11 J1 3 '15

Standard cluder crushers. *il diag Metal Ind* 2:18342-3 Ag '15

Starting a large, loaded, gyratory crusher by reversing the motor. A. J. Howitt. *Elec R & W Elec'n* 65:1173 D 10 '14

Successful roll operation. J. Ifumou. *Eng & Min J* 99:615-16 Ap 3 '15

Telmsith crushing plants. *il Munic J* 39:825-6 N 25 '15

Tendency of American milling machinery practice. J. I. Wile. *Eng & Min J* 99:691-4 Ap 17 '15

See also Hardinge mill

Cryptographs. See Ciphers

Crystallography

Chemical significance of crystalline form. W. Barlow and W. J. Pope. *il Am Chem Soc J* 36:1876-86 Ag '14

Electron theory and metallic selenium crystals. *Elec W* 64:1152 D 12 '14

Fractional crystallization of the picrates of the rare earths of the didymium group. L. M. Dennis and K. H. Rhodes. *Am Chem Soc J* 37:807-15 Ap '15

Method of reducing some metals in crystallized form on glass slips as permanent microscope mounts. J. H. Bowman. *il Am Chem Soc J* 37:1468-71 Je '15

Mixed crystals of ammonium chloride with manganese chloride. H. W. Foote and B. Saxton. *Am Chem Soc J* 36:1695-1704 Ag '14

Remarks concerning the chemical significance of crystalline form. T. W. Richards. *Am Chem Soc J* 36:1680-95 Ag '14

X-ray spectrometer for the study of the proportions of crystals. *diag Sci Am S* 79:19 Ja 9 '15

X-rays and crystalline structure. Sibley J 29:103-6 Ja '15; Same. *Sci Am S* 79:82 F 6 '15

X-rays and crystalline structure. W. H. Bragg. *Sci Am S* 79:5-7 Ja 2 '15

See also Liquid crystals

Crystals, Liquid. See Liquid crystals

**Cuba****Industries and resources**

Geology of the iron-ore deposits in and near Indiquiri, Cuba. J. F. Kemp. *il diag map Am Inst Min & Eng* 105:1801-36 S '15

Iron deposits of Indiquiri, Cuba. W. Lindgren and C. P. Ross. *ibid Eng il Am Inst Min & Eng* 105:2171-90 O '15

Mayari iron-ore deposits, Cuba. J. F. Kemp. *il Am Inst Min & Eng* 98:129-54; 103:1461-3 F, J1 '15

Culebra cut. See Panama canal-Culebra cut

**Culm**

Disappearing culm piles. *il Colliery* 35:648 J1 '15

Cultivators. See Roll millers

**Culverts**

Concrete culvert pipe and concrete piles. *Ry Age* 59:762-3 O 22 '15

Construction of the large canal crossing of Oak Orchard creek. E. Low. *il diag Eng N* 73:430-2 Mr 4 '15

Corrugated metal culverts for roads. *Metal Work* 84:457 O 8 '15

Corrugated pipe used successfully for culverts. *il Eng Rec* 71:558 My 1 '15

Culvert with ditch connection. F. O. Nelson. *diag Eng N* 74:943-4 N 11 '15

Culverts damaged by extreme freshet in small creek. A. E. Steere. *il Eng N* 74:650-1 S 30 '15

Development in culvert construction. H. J. Whiston. *Munic Eng* 48:184-5 F '15

Discussion of the administrative and design features of highway bridge and culvert work. A. Marston. *Eng & Contr* 42:589-90 D 23 '14

Economic design of culverts for various depths of fill. T. K. Shafter. *il diag Eng & Contr* 42:288-90 Mr 31 '15

Half-circle corrugated culverts for street drainage. J. C. Hiteshow. *il diag Eng N* 73:270 F 1 '15

Interlocking sectional concrete culvert. *il Concrete* 6em 7:127 S '15

Service secured from corrugated iron culverts. *il Ry Age* 58:316-18 F 19 '15

Small highway culverts. J. W. Strack. *il Munic Eng* 48:310-17 My '15

Standard concrete culverts recommended by the Michigan highway department. *diag Eng & Contr* 43:44 Ja 13 '15

Standard lateral drainage culvert for St. Mary's canal, Milk river project, U. S. reclamation service. *diag Eng & Contr* 43:385 Ap 28 '15

Standard small culverts recommended by the Illinois highway commission. *diag Eng & Contr* 42:572 D 16 '14

Tests of some large reinforced concrete culvert pipe. W. J. Schlick. *il diag Concrete* 6em 6:78-80 F '15

See also Bridges

**Cost**

Cost of concrete culverts and help in Milwaukee county, Wisconsin, in 1913. *il Eng & Contr* 42:486-7 N 13 '14

## Cumberland, Maryland

## Water supply

- Construction of Cumberland waterworks. F. H. Eastman. *Il Eng Rec* 71:137-8 Ja 30 '15  
 Water-supply and typhoid fever at Cumberland, Md. A. G. Fowler and M. J. Colton. *Il Eng N* 73:969-70 My 20 '15

## Cumberland road

- Old National road and its reconstruction. C. H. Moorefield. *Il diagrs Eng & Contr* 43:227-9 Mr 10 '15

## Cummins amendment. See Railroad law

## Cumulative voting. See Corporations

## Cuneiform inscriptions. See Inscriptions, Cuneiform

## Cunelform writing

- Cunelforms. W. Litco. *Inland P'tr* 54:367-8 D '14

## Cupellation

- Rule governing cupellation losses. W. J. Sharwood. *Am Inst Min E Bul* 104:1671-6 Ag '15; Excerpts. *Met & Chem Eng* 13:927 D 1 '15; Discussion. *Am Inst Min E Bul* 108:2454 D '15

## Cupola furnaces

- Bridging of a cupola. W. J. Keep. *Foundry* 43:310 Ag '15  
 Continuous malleable cupola practice increasing output of malleable castings. L. M. Gilmore. *Iron Age* 95:306-8 F 4 '15  
 Cupola bed and blast pressures. R. Moldenke. *Foundry* 43:98 Mr '15  
 Cupola melting experiments. *Iron Age* 96:187 J 1 22 '15; Same. *Ind Eng* 15:105 S '15  
 Cupola operation for continuous pouring. J. F. Ervin. *Il Iron Age* 96:183-5 J 1 22 '15  
 Desulfurization in cupola practice. *Iron Age* 98:468-9 Ag 20 '15  
 Foundry cupola of new and interesting design. G. B. Brandon. *diagrs Foundry* 42:469 J 1 '11  
 How to increase safety of cupola operations. *Il diag Foundry* 43:445-6 N '15  
 Insufficient air for the cupola. W. J. Keep and G. C. Hicks. *Foundry* 43:102-3 Mr '15  
 Large heats made in small cupolas. J. H. Anderson. *Il Foundry* 43:241-2 Je '15  
 Liquid fuel for melting. *Iron Tr R* 57:322-3 J 1 29 '15  
 New system of tuyeres. *diag Foundry* 43:381 S '15  
 Points on cupola practice. R. C. Hogdon. *Foundry* 43:17-18 Ja '15  
 Preventing cupola explosions. F. Oswald. *Il diag Iron Tr R* 55:1238-9 D 31 '14  
 Regulating the height of fuel bed in cupolas. R. Moldenke. *Foundry* 43:28 Ja '15  
 Scientific operation of a cupola. L. Townsend. *Il diag Iron Tr R* 57:123-6 J 1 15 '15; Same. *Foundry* 43:322-4 Ag '15; Same. *Iron Age* 95:590-1 Mr 11 '15  
 Slow cupola melting. *Foundry* 43:187 Ap '15  
 Slow melting and cupola lining burning-out. W. J. Keep. *Foundry* 43:183-4 My '15  
 Slow melting in the cupola. C. Metcalf. *Foundry* 43:108 Mr '15  
 Slow melting in the cupola. J. H. Anderson. *Foundry* 43:180-1 My '15  
 Straight or beveled cupola lining. W. J. Keep. *Foundry* 43:183 My '15  
 Use of relief valves on cupola blast pipes. *Foundry* 43:26-7 Ja '15

See also Foundry practice

## Curbs

- Akron, Ohio, curbs and gutters. J. A. Gehres. *Munic J* 33:219 F 18 '15  
 Buckeye Boreas curbing. *Il Munic Eng* 48:371-3 Je '15  
 Construction details and costs. *Munic J* 33:153-9 F 4 '15  
 Curb and gutter in cities and counties, 1915; tabulation. *Munic Eng* 48:363-4 Ap '15  
 Increased radius of curb at street corners. *Il diag Eng & Contr* 44:168 S 1 '15; *Eng Rec* 72:899 S 4 '15; Good Roads n s 10:101 S 4 '15; *Munic J* 33:433-4 S 16 '15; *Munic Eng* 48:183-4 N '15  
 Street and sidewalk improvement in the United States and Canada; tabulation. *Munic Eng* 48:352-8 Je '15  
 Street curbs of sandstone in Toledo. C. L. Sawyer. *Munic J* 33:40 Ja 14 '15

## Curbs, Concrete

- Analysis of concrete curb construction for suburban improvements near New York city. A. C. Haskell. *Il diagrs Eng & Contr* 43:58-61 Ja 20 '15  
 Concrete curb and gutter as constructed in Denver. E. B. Van de Groyen. *Il Munic Eng* 48:16-18 Ja '15  
 Constructing concrete curbs. H. W. Hatton. *diagrs Munic J* 33:768-70 Je 3 '15  
 Costs reduced by monolithic curb, gutter and pavement. *Il diagrs Eng Rec* 71:111 Ja 23 '15

## Curtains. See Lace curtains

## Curtis, Truman

- Truman Curtis, cartoonist. H. Harley. *Il Inland P'tr* 56:84-6 O '15

## Curtis publishing company

- Equipment of large publishing house; power plant, interior wiring and special features of the Curtis publishing company's building, Independence square, Philadelphia. *Il diagrs plans Elec W* 65:905-31 Ap 10 '15  
 Saving with electric vehicles. *Il Elec W* 65:1063-6 Ap 24 '15

## Curve plotting

- Estimating curves for standard bridges of the Illinois highway department. G. E. Burch. *Il diagrs Eng & Contr* 43:123-6 F 10 '15; Same cond. *Eng Rec* 72:171-3 Ag 7 '15  
 Graphic method for speed-time and distance-time curves. M. C. Woodruff. *Am Inst M E Pro* 31:1689-92 N '14; Discussion. 31:2804-16 N '15  
 Graphic methods for presenting data. W. C. Brinton. *diagrs Eng M* 48:396-406, 651-68 D '14-Ja '15  
 Method of laying out curves. *Colliery* 36:144 O '15  
 Plotting the involute curve. J. Edgar. *diagrs Mach* 21:180-2 F '15  
 Railway motor characteristic curves. E. M. Kimball. *Il Gen Elec R* 18:296-9 Ap '15  
 Two ways of laying out a compound curve. E. Strickhoff. *Mech Eng* 35:426 F 27 '15

## Curves

- Curves for solving the hydrostatic centenary. H. M. Hibb. *Eng N* 73:668-70 Ap 8 '15  
 Curves for strength and deflection of very long columns. E. L. Robinson. *Eng N* 73:1108-9 Je 10 '15  
 Elastic curve applied to the design of the Schotenville bridge. D. B. Steinman. *Eng Rec* 72:258-60 Ag 28 '15  
 Hydrostatic centenary flume on a concrete aqueduct. H. B. Muckleston. *Il diagrs map Eng N* 74:558-63 J 1 8 '15  
 To find maximum overhang of car on curve at platform. L. C. Jordan. *Eng Rec* 71:340 Mr 13 '15  
 Vertical curve for conveyers and inclined planes. R. J. Mumpson. *Colliery* 35:663-4 J 1 '15

See also Curve plotting; Railroads--Curves and turnouts

## Cut-outs. See Electric protective apparatus

## Cutlery

- Cutlery works of Thiers. J. Boyer. *Il Sci Am* 8 79:184-5 Mr 20 '15  
 Future of Sheffield light trades. *Engineer* 119:558-9 Je 4 '15  
 What capturing a German trade means. *Sci Am* 112:406 My 1 '15

## Cutting machines

- Air-operated cutting-off machine. *Il Iron Age* 96:1185 N 18 '15  
 Anderson die forming machine. *Il Mach* 22:157-8 O '15  
 Curtis automatic shrapnel-shell cutting-off machine. *Il Mach* 21:925-6 J 1 '15  
 Cutting-off attachment for lathes. *Il diagrs Engineer* 120:839 O 8 '15  
 Cutting tools. *Il Engineer* 119:275-7 Mr 19 '15  
 Cutting tools for bars and wheels. *Il Iron Tr R* 57:877-8 O 7 '15  
 Flue cutter. L. Lebavitz. *diagrs Ry Age (Mech ed)* 39:542 O '15  
 Gang slitting machine for metal sheets. *Il Iron Age* 96:447 Ag 19 '15  
 Gould & Eberhardt turret-type ring gear roughing machine. *Il Mach* 21:761-2 My '15

**Cutting machines—Continued**

- Heavy cutting-off machine, by the George Gorton machine co., Racine, Wis. *II Iron Age* 95:1084-5 My 13 '15.  
Machine for cutting bevel gears. *II Iron Tr R* 56:465-7 Mr 4 '15.  
Machine for cutting off copper bands. *II diag Iron Age* 96:243 J1 29 '15; Mach 21:1020 Ag '16.  
Machine for cutting rail ends. *II Iron Age* 96:1183 N 18 '15.  
Miller cutting machine for steel shapes. *II Iron Age* 95:1119 My 20 '15.  
New cutting off machine, by the Williams tool co. *II Iron Tr R* 56:932 My 6 '15.  
Rotary cutting-off machine. *II diag Engineer* 119:83-5 Ja 22 '15.  
6-in. rotary cutting off machine. *II Iron Age* 96:126-7 J1 15 '15.  
Special bar cutting-off machine. *II Iron Age* 96:363 Ag 12 '15.  
Special shrapnel cutting-off machine. *II Iron Age* 96:193 J1 22 '15.  
Trimming machine for shrapnel shells. *II Iron Age* 96:1225 Je 3 '15.

See also Drilling and boring machinery; Gear cutting; Grinding wheels; Machine tools; Metal cutting; Milling machines; Steel cutting; Thread cutting machines

**Cutting machines (for textiles)**

- Cameron principle of cutting fabrics. *II Textile World* 49:605-6 S '15.

**Cuyuna range. See Iron mines and mining—Minnesota****Cyanamid**

- Cyanamid process. F. S. Washburn. *Met & Chem Eng* 13:309-14 My '15.  
Cyanamid works at Niagara Falls. *II plan Eng* N 73:16-21 Ja 7 '15.  
Fixation of atmospheric nitrogen. W. S. Landis. *II Met & Chem Eng* 13:214-18 Ap '15; Same. *J Ind & Eng Chem* 7:435-8 My '15.  
Recent advances in the chemistry of the cyanogen compounds. J. H. Glennel. *Bibliog Am Inst Min* 19 Bul 106:2115-28 ( ) '15; Same pt 2. *Met & Chem Eng* 13:766-8 ( ) '15 '15.

**Cyanic acid**

- Use of cyanic acid in glacial acetic acid solution, and in mixtures of glacial acetic acid with other organic solvents; derivatives of 1-isobutyric acid amino-di-methylhydantoin. J. R. Bailey and W. T. Read. *Am Chem Soc J* 37:1884-93 Ag '15.

**Cyanide plants**

- Amador consolidated milling plant, Amador City, Calif. T. M. O'Brien. *II flow sheet Eng & Min J* 100:255-7 Ag 14 '15.  
Building the Tough-Oakes mill. J. A. Baker. *II diag Eng & Min J* 100:869-74, 915-18 N 27-1 A '15.  
Consulting metallurgist and metallurgical investigations. W. R. Hyth. *Met & Chem Eng* 13:251-2 Ap '15.  
Effect of mineralized waters in cyanide mills; abstract. T. B. Stevens and W. H. Bradley. *Met & Chem Eng* 13:380 Ja '15.  
Labor and power used in cyanide mills. H. A. McGraw. *Eng & Min J* 99:312-14 F 13 '15.  
Mill and cyanide plant of Chiksan mines, Korea. C. W. De Will. *II plan Am Inst Min* 19 Bul 101:931-6 My '15; Abstract. *Met & Chem Eng* 13:388 Jc '15.  
Pleasant-Glacier cyanide mill. A. McLaren. *II Eng & Min J* 100:177 J1 31 '15.  
Pittsburg-Bolores mining co.'s mill at Rockland, Nevada. E. J. Schrader. *II Eng & Min J* 99:653-4 Ap 10 '15.  
Rainbow mill, Oregon. W. M. Duke, Jr. *II plan Eng & Min J* 99:1102-6 Jc 26 '15.  
Simple cyanide-plant design. S. A. Worcester. *diag flow sheet Eng & Min J* 100:631-3 ( ) '15.  
Tonopah plant of the Belmont milling co. A. H. Jones. *II diag flow sheet Am Inst Min* 19 Bul 104:1731-58 Ag '15; Abstract. *Met & Chem Eng* 13:811-12 N 1 '15.

**Cyanide process**

- Aluminum precipitation at Nipissing. E. M. Hamilton. *Eng & Min J* 99:588-71 Mr 27 '15.  
Analysis of cyanide practice. H. A. McGraw. *Eng & Min J* 99:98-9 Ja 9 '15.  
Assay of cyanide solutions, lead acetate method. *diag Eng & Min J* 100:521-2 S 25 '15.

- Assaying gold-bearing cyanide solutions. D. M. Levy and H. Jones. *Eng & Min J* 100:150 J1 24 '15.  
Chart for determining tailings value. W. J. McCauley. *Eng & Min J* 99:575 Mr 27 '15.  
Combined cyanide and other processes. H. A. McGraw. *Eng & Min J* 98:1007-9, 1127-9 D 5, 26 '14.  
Cost of cyaniding. H. A. McGraw. *Eng & Min J* 99:186-7 Mr 13 '15.  
Cyanidation of low-grade sulphide ores in Colorado. H. C. Parmelee. *II plan Met & Chem Eng* 13:421-5, 477-9 J1-Ag '15.  
Cyaniding at the Bullfinch proprietary, western Australia. *diag Met & Chem Eng* 13:331-2 My '15.  
Cyaniding at the Sons of Gwalia, Australia. A. Wrench. *flow sheets Met & Chem Eng* 13:925 D 1 '15.  
Cyaniding practice of Churchill milling co., Wonder, Nev. H. C. Carpenter. *plan Am Inst Min* 19 Bul 102:1317-32 Je '15; Abstract. *flow sheet Met & Chem Eng* 13:813-14 N 1 '15.  
Development of continuous counter-current decantation in cyanidation of slime. W. J. Pentland. *plan Met & Chem Eng* 13:105-7 F '15.  
Effect of air in zinc-dust precipitation systems. D. W. Miner. *II diag Eng & Min J* 99:534-5 Mr 20 '15.  
Effect of carbon in contact with auriferous cyanide solutions; abstract. W. R. Feldtmann. *Met & Chem Eng* 13:389 Je '15.  
Effect of carbon or graphite on auriferous cyanide solutions. P. T. Irwin. *Met & Chem Eng* 13:873-4 N 15 '15.  
Electrolytic precipitation of gold, silver and copper from cyanide solutions. G. H. Clevenger. *diag Met & Chem Eng* 13:803-6, 852-60 N 1-15 '15.  
Filtration of slime. L. D. Mills. *Met & Chem Eng* 13:724 ( ) '15 '15.  
Gold milling in California—a comparison. L. A. Palmer. *II diag Met & Chem Eng* 13:617-24 S 15 '15.  
Gold precipitation on paper. D. Lay. *Eng & Min J* 100:276-7 Ag 14 '15.  
Grinding ore for cyanidation; a suggested modification for all-slime practice. W. J. Pentland. *Met & Chem Eng* 13:205-6 Ap '15.  
Grinding ore for cyanidation; a suggested modification for all sliming practice. J. S. Pettis. *Met & Chem Eng* 13:9-10 Ja '15.  
Liquid jets. C. T. Du Bell. *Met & Chem Eng* 13:714-16 ( ) '15 '15.  
Method for the determination of gold and silver in cyanide solutions. L. W. Bahney. *II Am Inst Min* 19 Bul 98:339-44 F '15; Discussion. 101:1137-9 My '15.  
Notes on Homestake metallurgy; stamp milling; analysis of lost time; cost. A. J. Clark. *II Am Inst Min* 19 Bul 103:1381-1400 J1 '15; Abstract. *Met & Chem Eng* 13:764-6 ( ) '15 '15; Discussion. *Am Inst Min* 19 Bul 108:2453-4 D '15.  
Precipitating apparatus for use in cyaniding. *plan Eng & Min J* 99:1079 Jc 19 '15.  
Precipitation of cyanide solutions. G. H. Clevenger. *Met & Chem Eng* 13:725 ( ) '15 '15.  
Process of cyaniding; a patented procedure. *Met & Chem Eng* 13:871 N 15 '15.  
Pulp constants, with tables to facilitate tonnage calculations for pulps of all usual solution and dry slimes specific gravities. G. H. Clevenger. *II W. Young and T. N. Turner. Eng & Min J* 98:1079-94 D 19 '14.  
Recent advances in the chemistry of the cyanogen compounds. J. H. Glennel. *Bibliog Am Inst Min* 19 Bul 106:2115-28 ( ) '15.  
Redning cyanide precipitates. H. T. Durant. *Eng & Min J* 100:523-4 S 25 '15.  
Slime agitation and solution replacement methods at the West End mill, Tonopah, Nev. J. A. Carpenter. *diag Am Inst Min* 19 Bul 104:1630-51 Ag '15; Same. *Met & Chem Eng* 13:671-6 ( ) '15.  
Solution of gold and silver. M. H. Kuryla. *Met & Chem Eng* 13:723-4 ( ) '15 '15.  
System of zinc-slaving diagonal. J. Shumona. *II Eng & Min J* 100:725 ( ) 30 '15.  
Treatment of arsenical-antimonial sulphide ore; abstract. K. B. Moore and H. R. Galmand. *Met & Chem Eng* 13:508-9 Ag '15.



**Cyanide process—Continued**

- Tube-milling in all-slime cyanide practice. W. J. Pentland. *Met & Chem Eng* 12:750-3; 13:204-5 D '14, Ap '15  
 Tube-milling tonnage calculation and notes on tube-milling. J. H. Haynes. *Met & Chem Eng* 13:10-12 Ja '15  
 Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. *Ind diags J Ind & Eng Chem* 7:119-30 F '15; Same. *Met & Chem Eng* 13:55-9, 91-8 Ja-K '15  
 Zinc-dust precipitation tests. N. Herz. *Am Inst Min En Bul* 104:1507-13 Ag '15; Abstract. *Met & Chem Eng* 13:973-4 D '15 '15  
 Zinc in the cyanide mill. A. Dorfmann. *Eng & Min J* 100:680 O '23 '15  
*See also Cyanide plants*

**Cyanides**

- Cyanide consumption in the United States and Canada. *Met & Chem Eng* 12:743-4 D '14  
 Cyanide from coal gas. C. C. Tutwiller. *Met & Chem Eng* 12:785 D '14  
 Making cyanide from cyanamide. *Eng & Min J* 99:272 F '15  
 Metal cyanides. *Metal Ind n s* 13:474-5 N '15

**Cyanogen**

- Determination of Prussian blue in washer sludge and spent oxide. *Am Gas Light J* 103:151 S '15

**Cyanogen compounds**

- Recent advances in the chemistry of the cyanogen compounds. J. M. Chennell. *bibliog Am Inst Min En Bul* 106:2115-28 O '15; Same pt 2. *Met & Chem Eng* 13:766-8 O '15 '15

**Cyclecars**

- Cyclecar the future means of transportation. H. K. Randall. *Automobile* 31:1076 D '10 '14  
 Morse cycle car has front drive. *Automobile* 33:277 Ag '12 '15

**Cyclograph. See Cathode ray tube****Cylinders**

- Blinder for cylinder cores. W. J. Keop. *Foundry* 43:240 Je '15  
 Cylinder friction and lubrication testing apparatus. A. Flowers. *diag Power* 42:208-10 Ag '10 '15  
 Machining motor cycle parts. D. T. Hamilton. *Il Mach* 21:377-80 Ja '15  
 Practice of the oxy-acetylene welding process; welding of cylinders. S. W. Miller. *Il Mach* 22:111-14 O '15  
 Quick-closing door for pressure cylinders. *Il diag Eng N* 73:1004-5 Je '15  
 Thickness of cylinder wall. T. N. Haffner. *Mach* 21:373 Ja '15  
 Weight of rods or cylinders per running inch. W. L. Tryon. *Foundry* 43:16a, 58a Ja-K '15  
*See also Pistons*

**Cypress**

- Cypress and juniper trees on the Rocky mountain region. C. B. Sudworth. 28 pls 11 maps *U S Agric Bul* 207:1-36 '15  
 Southern cypress. W. R. Mattoon. *Il map U S Agric Bul* 272:1-74 '15  
 Suggestions for using cypress knees. H. K. Weiss. *Il Am For* 31:1041-2 N '15  
 Use of native woods for interior finish. C. M. Price. *Il Brickb* 24:219-21 S '15

**D****Dairy houses**

- Plan for a small dairy house. M. Kelly. *Il plan U S Agric Farmers' Bul* 689:1-4 '15

**Dairy products**

- British India. *U S Sp Cons Rep* 72:270-5 '15

**Dakota sand**

- Oil, gas, and water content of Dakota sand in Canada and United States. L. C. Huntley. *Am Inst Min En Bul* 102:1323-53 Je '15; Discussion. 108:2428-30 D '15

**Dallas-Cello canal**

- Lock gates for Dallas-Cello canal. *diag plan Eng Rec* 70:614-16 D '15 '14

**Dam failures**

- Blowout at end of concrete dam. Seneca Falls, N. Y. *Il Eng N* 74:570-1 S '18 '15

- Construction, failure and reconstruction of a small dam near Tullahoma, Tenn. J. Wilkes. *Eng & Contr* 42:464-7 N '11 '14  
 Failure of Lyman dam, Arizona. *Eng N* 73:794 Ap '22 '15  
 Failure of small earth dam. G. H. Ruhlmg. *Il Eng N* 73:1121 Je '10 '15  
 Failures and partial failures of dams in Pennsylvania. *Eng & Contr* 43:75 Ja '27 '15

**Damages**

- Adjustment of the consequential damages at the Tower (grove crossing). L. R. Bowen. *Assn Eng Soc J* 55:116-21 O '15  
 Protecting dealer on producer's guarantee. M. J. Buckley. *Metal Work* 84:503 N '15  
*See also Employers' Liability; Personal Injuries; Railroads—Claims; Street railroads—Claims*

**Damascus steel**

- Damascus blades. *Sci Am S* 79:200-2 Mr '27 '15

**Damask steel. See Damascus steel**

- Damp-proof timber floor. Cost of. J. A. Holmes. *Eng N* 72:332-3 Ag '27 '14; Same. *Ind Eng* 14:372-3 S '11; Same. *Bldg Age* 37:18 Ap '15

**Dampers**

- Dampers for large sheet metal ducts. *diag Metal Work* 83:668 My '15

**Dams**

- America's greatest irrigation project; Bassano dam, southern Alberta. Z. E. Black. *Il Sci Am* 113:252-3 S '18 '15  
 Bombay hydro-electric scheme. A. Dickinson. *diag map Ind* 12:15 J 53:693-5 My '15 '15  
 Caverns under the Austin, Texas, dam. A. C. Hanton. *map Eng N* 73:788-9 Ap '22 '15  
 Considerations of sliding, overturning, crushing and blowouts in dam design, by the Ohio river board. W. J. Mitchell. *diag Eng & Contr* 41:133-1 S '15  
 Contract methods and equipment for a typical Ohio river dam. K. H. Shriver. *Il diag plan Eng N* 73:806-11 Ap '20 '15  
 Coon Rapids low head hydro-electric development on the Mississippi river near Minneapolis. J. W. Link. *Il diag plan W Soc E J* 19:270-1000 D '11; Same cont. *Eng & Contr* 43:151-2 F '17 '15; Discussion. *W Soc E J* 19:1007-15 D '14  
 Design low dam for 30-foot height increase across Nottuckkey river. W. V. N. Powell. *Il Eng Rec* 71:175 S '15 '15  
 Handling hydraulic oil in Flute dam. J. Jensen. *Il diag Eng Rec* 72:280 J '17 '15  
 Hindu dam on Rappahannock river. *Il diag plan map Eng Rec* 71:34-5 Ja '15 '15  
 How Colorado dam construction is supervised. *Eng Rec* 72:252-3 Ag '28 '15  
 Hydraulic fill dam for an earthquake region: work on the Calaveras reservoir of the San Francisco water supply. *Sci Am* 112:154 F '13 '15  
 Hydro-electric plant at a Bolivian tin mine. M. R. Lamb. *Il Eng & Min J* 99:7-9 Ja '15 '15  
 Jam-proof dam. *plan Eng N* 73:895 My '15 '15  
 Lachontan dam. Truckee-Carson irrigation project, Nevada. D. W. Cole. *Il diag map Eng N* 73:768-62 Ap '22 '15  
 Methods and costs of belt conveyor earth-handling for the Lachontan dam. *Eng & Contr* 44:414 N '24 '15  
 Models, properly designed, show correctly performance of dams and turbines. H. E. Grant. *Eng Rec* 72:377-8 S '25 '15  
 Pennsylvania commission issues rules regarding dams. *Eng Rec* 72:225 Ag '21 '15  
 Percolation and upward pressure of water: abstract. W. A. Mitchell. *Am Soc M E J* 37:121-2 F '15  
 Provision for upward pressure and interior drainage in designing new Lock Haven dam at Baltimore. *Eng & Contr* 43:150 F '17 '15  
 Shearboards versus summit pools in hydraulic dam construction. R. M. Overstreet. *Eng Rec* 70:678 D '19 '14  
 Spaulding-Drum power development: with discussion. J. A. Britton. *Il diag Am Soc M E J* 37:315-22 Ap '15  
 Swedish government builds hydroelectric plant above the Arctic circle. *Il diag Eng Rec* 72:158-9 Ag '15 '15  
 Uses for power from irrigation dams: abstract. E. K. Scott. *Ind Eng* 14:412-13 O '14

**Dams—Continued**

- Water slopes of earth dams protected in novel way. A. P. Davis and D. C. Henny. *Eng Rec* 72:452 O 9 '15
- West Fork waterworks dam at Fort Worth. *II diag* *Eng Rec* 71:147-8 Ju 30 '15
- West Fork waterworks dam at Fort Worth. H. G. McCormick; J. H. Hawley. *Eng Rec* 71:307-8 Mr 6 '15
- Winter operation of Stoney gates. *II diag* *Eng Rec* 70:691 D 26 '14
- See also:* Cofferdams; Dam failures; Embankments; Hydroelectric plants; Irrigation; Reservoirs; also Elephant Butte dam; Kennisco dam

**Architecture**

- Architecture of Kennisco dam. A. D. Flinn. *II diag* *Eng N* 74:433-6 S 2 '15

**Foundations**

- Excavation for foundation of Elephant Butte dam. B. H. Baldwin. *II diag* plan *Eng N* 73:49-54 Ja 14 '15
- German studies of uplift pressure on masonry dams. H. Schaefer. *diag* *Eng & Contr* 44:218-21 S 22 '15
- Grouting foundations for gravity-section dam. H. S. Johnston. *diag* *Eng Rec* 70:650-1 D 12 '14
- Micaceous rock requires careful watching. C. M. Saville. *Eng Rec* 72:519 O 23 '15
- Rock-fill dam with some extraordinary foundation problems. M. C. Hinderlider. *II diag* *Eng N* 73:600-4 Ap 8 '15

**Dams, Concrete**

- All-concrete dams: the next step in the evolution of masonry dam construction. *Eng & Contr* 43:80 F 3 '15
- Arrowrock dam. C. H. Paul. *II Boston Soc C* 13 J 2:337-49 N '15
- Austin dam and power plant. R. S. Taylor. *II Eng & Contr* 43:465-7, 492-5 My 26-Je 2 '15; Same cond. *Elec R & W Elec'n* 66:639-45 My 22 '15; Same cond. *Eng N* 73:1089-93 Jo 3 '15
- Building the Mathis dams. B. Latuchill. *II diag* plan *Eng N* 74:529-32, 583-91 S 16-23 '15
- Concreteing methods and records. Elephant Butte dam. B. H. Baldwin. *diag* *Eng N* 74:696-8 O 7 '15
- Concreteing the Spaulding dam, California. *II Eng N* 73:1067 Je 3 '15
- Construction on Elephant Butte dam for reclamation service in New Mexico near completion; views. *Eng Rec* 72:391 JI 17 '15
- Construction plant and methods for concrete work on the Lock twelve dam, Coosa river, Alabama. B. L. Sayers and A. C. Polk. *diag* plan *Eng & Contr* 43:260-6 Mr 24 '15
- Construction plant at the Neputum dam, Hartford, Conn. *II Eng N* 74:226-6 JI 1 '15
- Design and construction of the Lake Watrous dam of the New Haven water co. C. M. Blair. *diag* plan *Eng & Contr* 44:100-2 Ag 11 '15
- Floods top unfinished dam green concrete uninjured. C. Wigmore. *II Eng Rec* 71:775 Jo 19 '15
- Hollow reinforced-concrete structure replaces dam at Austin, Texas, which failed fifteen years ago. *II Eng Rec* 71:972-3, 707-9, 750-1 My 29-Je 12 '15
- Hydroelectric development at Austin, Tex. *II diag* *Elec W* 65:1460-2 Jo 5 '15
- Kennisco dam construction in 1914. W. F. Smith. *II plan* *Eng N* 73:966-8 My 20 '15
- Masonry placing records at three dams compared. *Eng Rec* 71:213 F 13 '15
- Multiple-arch dam to retain quartz mill tailings. *II Eng N* 73:818-19 Ap 29 '15
- Multiple-arch diversion dam at Three Miles Falls, Oregon. H. D. Newell. *II diag* *Eng N* 73:1009-12 My 27 '15
- Old and new Bear valley dams and Crags dam in service. J. B. Lippincott. *II Eng N* 74:854-5 O 28 '15
- \$101,000 hollow concrete dam, St. Francis river. *diag* *Eng N* 74:1032-3 N 25 '15
- Placing masonry for the Elephant Butte dam, New Mexico. B. H. Baldwin. *II diag* *Eng N* 74:845-9 S 30 '15
- Questions about the Austin, Tex., dam. J. D. Justin; R. S. Taylor. *Eng N* 74:182-3 JI 22 '15

- Reconstruction of the Austin, Texas, dam. *II Eng N* 73:528-9 Mr 18 '15
- Reinforced concrete storage dam at Swift Current, Sask., Canada. J. B. Babcock. *II diag* *Concrete Cem* 6:199-201 Ap '15
- Rhipogonus dam on the upper Penobscot in Maine. *II Eng N* 74:282-3 Ag 5 '15
- Salmon creek dam; a constant-angle arch type. *II map* *Eng N* 73:472-4 Mr 11 '15; Abstract. *Eng M* 49:282 My '15
- Small impounding and diversion dam and measuring weir at Jordan Narrows. S. Q. Cannon. *II Eng N* 73:860 My 6 '15
- Thermophones in Kennisco dam. W. F. Smith. *diag* *Eng N* 72:1172 D 10 '14
- Well-designed concrete plant aids construction of waterworks dam. *II plan* *Eng Rec* 72:602-4 N 13 '15
- Yardage record at Kennisco dam due, in part, to operation of mixers. G. T. Seabury. *Eng Rec* 71:199 F 13 '15

**Dams, Mine. See Mine dams****Danger signs. See Signs****Daniels, Josephus, 1862-**

- Our naval development as related to national defense. J. H. Edwards. *Eng M* 50:173-94 N '15

**Dardanelles**

- Defenses of Constantinople. H. C. Woods. *II Sci Am* 8 80:2-3 JI 3 '15
- Forcing the Dardanelles. *II map* *Sci Am* 112:241, 264-5, 216-17 Mr 13-20, Ap 3 '15
- Lesson of the Queen Elizabeth. *Sci Am* 112:262 Mr 20 '15
- Super-dreadnought Queen Elizabeth at the Dardanelles. plan *Sci Am* 8 79:299 My 8 '15

**Dark days**

- Dark days and forest fires. C. F. Talman. map *Sci Am* 112:229 Mr 6 '15

**Dark rooms. See Radiography****Dartmouth college, Hanover, New Hampshire**

- Gymnasium: designs. Brickb 24:pl 54-5 Ap '15

**Davits**

- Davits and the new requirements. H. W. Broady. *II diag* *Int Marine Eng* 20:260-4, 305-9, 355-8 Je-Ag '15
- Marten-Premann compensating davit. *diag* *Int Marine Eng* 20:373-4 Ag '15

**Day labor**

- Contractor and management engineering. *Eng & Contr* 42:573 D 23 '14
- Experience in paying by day labor at Duluth, Minn. J. Wilson. *Eng & Contr* 43:445 My 19 '15
- Sewer work by day labor at Carlisle, Pa.; methods employed, hours of labor and itemized costs. J. C. Illioslaw. *II Munic J* 38:506-8 Ap 15 '15

**Daylight**

- Air shaft illumination as studied by models. C. H. Sharp. *IIlum Eng Soc* 9:598-610, no 7 '14
- Planning for daylight and sunlight in buildings; with discussion. L. B. Marks and J. H. Woodwell. *II diag* *IIlum Eng Soc* 9:648-86 no 7 '14

**Daylight, Artificial**

- Artificial daylight. H. B. Ivex. *II diag* *II J Fr Inst* 177:471-99 My '14; Same. *Sci Am* 8 78:306-8, 412-14 D 19-26 '14
- Artificial daylight in practice. M. Luckiesh. *II Elec W* 65:71-3 JI 10 '15; Abstract. *Eng M* 49:918 S '15
- Artificial daylight—its production and use. M. Luckiesh and R. E. Cady. *II diag* *IIlum Eng Soc* 9:839-64 no 8 '14; Same. *Am Gas Light J* 101:390-1 D 21 '14; Abstract and discussion. *Elec W* 64:655 O 3 '14; Discussion. *IIlum Eng Soc* 9:864-72 no 8 '14; Discussion. *Am Gas Light J* 101:391-4 D 21 '14
- Data on artificial daylight units. C. H. Sharp. *II lum Eng Soc* 10:219-21 no 3 '15
- Daylight glass; abstract. S. H. Gage. *IIlec W* 66:1041 N 8 '15
- Development of daylight glass; with discussion. B. J. Brady. *diag* *IIlum Eng Soc* 9:887-80 no 9 '14
- Gaseous-conductor lamp for color matching; abstracts. I. M. Moore. *diag* *IIlec W* 66:1160 N 20 '15; *IIlec R & W Elec'n* 67:949 N 20 '15; *Met & Chem Eng* 13:886 D 1 '15
- Holding up the mirror. R. L. Godinez. *Arch & Bldg* 47:51-2 F '15

**Dayton, Ohio**

Electro-platers' 1915 convention city. W. Fraine. *II Metal Ind n s* 13:179-83 *My* '15  
 Topographic survey of the city of Dayton. R. H. Randall. *Eng N* 74:942-3 *N* 11 '15

**Floods**

Engineering lessons from the Ohio floods. J. W. Alvord. *II Boston Soc C* 30 *J* 1:85-108; Discussion. 1:109-17 *Mr* '14  
 Flood prevention plans for Dayton. W. S. Crandall. map *Munic Eng* 49:103-4 *S* '15

**Politics and government**

Commission and city manager forms of government. H. H. Rumble. R. W. Pentross and J. E. Burke. *Munic Eng* 49:54-5 *Ag* '15  
 Commission-manager form of government and its relation to the engineering profession. H. M. Walter. *Boston Soc C* 30 *J* 2:1-14 *Ja* '15; Abstract. *Eng M* 48:891-6 *Mr* '15; Discussion. *Boston Soc C* 30 *J* 2:14-21 *Ja* '15  
 Dayton's progress under commission-manager. W. S. Crandall. *Munic Eng* 49:67 *Ag* '15

**Public works**

Municipal exhibit at Dayton. *II Munic J* 39: 690-2 *N* 4 '15

**Daytona, Florida****Sewerage**

Sewage pumping, screening and sterilizing station at Daytona; specifications, plans *Eng & Contr* 42:525-7 *D* 2 '14

**Dead animals**

Removal of dead animals in cities. A. L. Hostwick. *Munic J* 38:84-5 *Ja* 21 '15

**Deaf**

Electrical equipment for enabling the deaf to hear. *II Elec W* 66:1221-2 *N* 27 '15

**Deafness**

Deaf-mutism produced by shock. *Mel Am* 8: 80:336 *N* 20 '15

**Debating**

Section foreman's debating society on the C. M. & St. P. Ry. W. H. Kofmehl. *Ry R* 56: 665 *My* 15 '15

**Debt**

"How receipt in full" protects the holder. R. J. Buckley. *Metal Work* 83:622 *Ap* 23 '15

**Decantation**

Development of continuous counter-current decantation in cyanidation of alumina. W. J. Portland. plan *Met & Chem Eng* 13:105-7 *R* '15  
 Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. diag *J Ind & Eng Chem* 7:126-9 *R* '15; Same. *Met & Chem Eng* 13:94-6 *R* '15

**Decatur, Illinois****Water supply**

Filtration plant, city of Decatur, Illinois. H. Rithrauff. *II Am Water Works Assn J* 2: 455-64 *Ja* '15

**Deckhouses. See Naval architecture****Decoration and ornament**

Craft of tile-making and its relation to architecture. J. H. D. Allen. *II Am Inst Arch J* 3:5-11 *Ja* '15

*See also Architecture—Details; Concrete, Ornamental; Design, Decorative; Furniture; House decoration; Ironwork; Architectural; Lighting fixtures; Metal work; Mural painting and decoration; Show windows; Stucco; Textile design*

**Decorative design. See Design, Decorative****Decimeters**

Direct-reading instrument for measuring the logarithmic decrement and wave length of electromagnetic waves. R. A. Kolmer. *II diag II S Bur Stand Bul* 11:421-55 *My* 10 '15  
 Recent advances in wireless measuring instruments. H. T. Wade. *II diag Sci Am* 113:356 *O* 23 '15

**Deerfield river, Massachusetts**

New plant marks further step in development of Deerfield river. *II diag map Eng Rec* 72:374-7, 423-4 *S* 25-*O* 2 '15

**Defalcations. See Embezzlement****Defective children**

Teaching defective children. A. M. Jungmann. *Sci Am* 112:361 *Ap* 17 '15

**Deformations (mechanics)**

Recent experiments on elastic hysteresis: abstract. R. Grammel. *Am Soc M E J* 37:115-16 *R* '15

**Dehydration**

Centrifugal dehydration of water gas tar at Amsterdam. *Am Gas Light J* 102:349 *My* 31 '15

Dehydrating oil plant of Nevada petroleum co., California. R. J. Harrison. *II diag Am Inst Min E Bul* 90:637-44 *Mr* '15

Dehydrating petroleum oil. *diag Met & Chem Eng* 13:570 *S* 1 '15

Use of iodine as a dehydrating and condensing agent. H. Gilbert. *Am Chem Soc J* 37:1748-63 *J* 1 '15

**Delaware and Hudson railroad**

85th annual report. *Ry Age* 58:875-6, 915-18 *Ap* 23 '15

**Delaware, Lackawanna & Western railroad**

Completing the summit cut-off of the Lackawanna. *II Ry Age* 59:809-10 *O* 29 '15

Construction of the Hubbard cut-off. D. L. & W. R. R. *II diag Ry* 11:56:111-15, 143-9 *Ja* 23-30 '15

Tunkhannock viaduct nearing completion. *II Eng Rec* 72:42-3 *J* 10 '15

Wireless telegraph and telephone on the D. L. & W. R. R. L. B. Foley. *II Ry R* 56:491-3 *Ap* 10 '15

**Delhi, India**

British India. map *U S Sp Cons Rep* 72:176-81 '15

**Dementia. See Insanity****Demolition work. See Wrecking****Demonstration farms**

Development of Long Island. H. B. Fullerton. *Ry Age* 57:1040-1 *D* 4 '11

**Demurrage**

Impartial study of freight-car demurrage. C. C. White. *Ry Age* 58:828 *Ap* 16 '15

Using a blank to prevent demurrage. H. A. Russell. *Iron Age* 96:415 *Ag* 19 '15

**Denatured electric current. See Electric currents****Dental cements**

Germeicidal efficiency of dental cements. P. Postelske. *II J Ind & Eng Chem* 7:195-202 *Mr* '15

Germeicidal efficiency of dental cements. P. Postelske. *J Ind & Eng Chem* 7:1000-1 *N* '15

Possible sterilizing properties of dental cements. W. V-B. Ames. *J Ind & Eng Chem* 7:723 *Ag* '15

**Dental colleges**

Evens museum and dental institute, University of Pennsylvania, Philadelphia: designs and plans. *Brick* 21:pl 46-9 *Ap* '15

Two dental buildings: Evens museum and dental institute, University of Pennsylvania, Philadelphia. H. D. Eberlein. *II plans Arch Rec* 37:517-32 *Je* '15

**Dental infirmaries. See Forsyth dental infirmary****Dental instruments and apparatus**

Small-sized dental motor for direct drive. *II Elec W* 65:563 *P* 27 '15; *Elec R & W Elec N* 66:661 *Ap* 3 '15

Use of electricity in a dental infirmary. *II Elec W* 66:202-4 *J* 24 '15

**Denver, Colorado**

City planning and civic-center work in Denver. H. Head. *II Am Inst Arch J* 3:497-500 *N* '15

**Description**

Sheet metal contractors in Denver. *II Metal Work* 83:794-5 *Ja* 4 '15

**Parks**

Connecting roads to mountain parks of Denver, Colorado. O. H. Thum. *II Munic Eng* 49:15-17 *J* 1 '15

Road construction in Denver's mountain parks. O. H. Thum. *II plan Munic J* 38:417-20 *Ap* 1 '15

**Denver, Colorado -Continued****Streets**

Concrete curb and gutter. E. B. Van de Greyn. II Munic Eng 48:16-18 Ja '15

**Water supply**

Rotary screens remove macro-organisms from Denver's lake water supply. II Eng Rec 72: 291-2 S 4 '15

**Denver & Rio Grande railroad**

Abstract of annual report. map Ry Age 59: 845-6 N 5 '15

**Deodorizers**

Air ozonation. M. W. Franklin. J Ind & Eng Chem 8:852-3 O '14; Same. Am Soc Heat & V 12 30:344-50 '14

Experiment with ozone as an adjunct to artificial ventilation. A. M. Feldman. Heat & Ven 12:35-6 Mr '15

Investigations on the nature and elimination of odors and dust from a garbage reduction plant. H. W. Mahr and A. C. Kraft. II diag J Ind & Eng Chem 7:778-85 S '15

Ozone—an aid to factory ventilation. V. I. Greene. diag Eng M 49:517-25 J1 '15

Test plant operated to deodorize oil refinery wastes. E. L. Hesser. II diag Eng Rec 72: 541-2 O 30 '15

**Department stores**

Altman stores, New York. II Arch & Bldg 46: 439-46 N '14

Amos store, Cleveland, Ohio. II plans Arch & Bldg 47:359-64 O '15

Department store accounts. H. C. Magee. J Account 19:268-91 Ap '15

Heating and ventilation of main floor and vestibules of the Lord & Taylor store. J. Graham. diag Dom Eng 72:282-3 S 4 '15

Merchandising of hosiery and underwear. C. C. Parlin. Textile World 49:sup265 | My '15

Rosenbaum co. department store, Pittsburgh. J. Hunt. II Arch & Bldg 47:259-72 J1 '15

See also Mail order business

**Depreciation**

Accounting for depreciation. J. R. Cravath. Elec W 65:213-14 Ja 23 '15

Accounting for depreciation. R. Sealy. Elec W 65:460-1 P 20 '15

Basing depreciation on par value. Elec Ry J 45:1143 Ja 19 '15

Depreciation. J Account 18:492-3 D '14

Depreciation accounts. W. H. Lawton. Elec W 65:1678-9 Jo 26 '15

Depreciation and confiscation. A. C. Humphreys. Ry Age 59:311-12 Ag 20 '15

Depreciation and valuation for rate making. L. H. Haney. J Account 19:314-51 My '15

Depreciation as applied to oil properties. P. W. Henry. Am Inst Min 13 Bul 97:23-30 Ja '15; Discussion. 101:1148-51 My '15

Depreciation formula of the American society of civil engineers. J. Bauer. J Account 20: 104-11 Ag '15

Depreciation in appraisals. J Account 19:458-60 Ja '15

Depreciation in public utilities. Elec W 66: 743 O 2 '15

Depreciation, interest and manufacturing cost. W. C. Wright. J Account 20:361-4 N '15

Depreciation of machine tools: abstract. Ind Eng 14:409 O '14

Depreciation of manufacturing plants. F. C. Colley. J Account 20:166-72 S '15

Depreciation of property. W. B. Curtiss. Con Elec R 18:1099-1100 D '15

Depreciation problems. H. Erickson. Am Gas Inst 19: 9:pt 2, 1682-1638; Discussion. 9:pt 2, 1638-82 '14

Discussion of depreciation. P. J. Kealy. Eng & Contr 44:118-23 Ag 18 '15

Distributing overhead expense. N. T. Meeker. Eng M 50:254-8 N '15

Idaho court overrules depreciation deduction. Eng Rec 72:480-1 O 16 '15

In rate-fixing by commission, should depreciation be deducted from plant valuation? A. C. Humphreys. Am Gas Inst 19: 9:pt 2, 1557-82; Discussion. 9:pt 2, 1638-82 '14

Life of way structure as affected by engineering and municipal conditions. P. N. Wilson. diag Elec Ry J 45:1212-13 Jo 26 '15

Methods of figuring depreciation and present values. W. A. Del Mar. Ind Eng 14:402-3 O '14

Obsolescence as cause of depreciation. S. Walton. J Account 20:149-51 Ag '15

Problem of depreciation. G. O. May. J Account 19:1-13 Ja '15

Rational method of calculating depreciated value. H. P. Gillette. Eng & Contr 44:24-7 J1 14 '15

Utilities bureau; conference on valuation. Philadelphia, 1915. Elec Ry J 46:1031-2 N 20 '15

Valuation of water works properties. H. P. Gillette. Eng & Contr 43:486-8 Jo 2 '15

**Derailments**

Accident caused by defective wheels. II. W. Delmap. Ry Age 59:48 J1 9 '15

How an axle failed in service. II Iron Tr It 56:507-10 | Mr 25 '15

Mysterious derailments. R. P. Williams. Elec Ry J 45:1078-9 Jo 5 '15

Report on freight train derailment, Chicago, Milwaukee & St. Paul Ry. Ry R 57:172-3 Ag 7 '15

Report on wreck due to broken car wheel. diag Ry R 56:789-91 Jo 12 '15

Tender derailments. B. L. Wheatley. Ry It 56:654-5 My 15 '15

Tender derailments. C. W. Little. Ry Age (Mech ed) 89:58 P '15

Wreck due to a faulty car wheel. II Iron Tr R 57:937-40 | N 11 '15

**Derelicts**

Hunting for derelict ships. II Sci Am 112:606 Jo 19 '15

**Derrick cars. See Cams (derrick)****Desert lands**

United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 946-51 '15

**Desert vegetation**

Indiana desert. II. Maxwell. II Sci Am S 80: 248-50 O 16 '15

**Deserts**

Motor travel in desert country of southern California. I. H. Kddy. II Eng & Min J 100: 835-7 N 20 '15

**Design**

From the soil up—a new method of designing. A. Reutterdahl. Eng & Contr 42:581-5 D 23 '14

See also Architecture—Designs and plans; Architecture, Domestic—Designs and plans; Bridge design; Concrete construction—Design; Machinery—Design; Textile design

**Design, Decorative**

Edward Edwards and his art. S. H. Morgan. II Inland Tr 55:516-17 J1 '15

Photo-kaleidograph. II Sci Am 112:103 Ja 30 '15

See also Textile design

**Des Moines, Iowa****Politics and government**

Commission and city manager forms of government. II. H. Rumble. II. W. Pentross and J. E. Burke. Munic Eng 40:52-3 Ag '15

**Dessauer process**

Whisper motion pictures. II Sci Am 112:312 Ap 3 '15

**Destroyers. See Torpedo boat destroyers****Detarring. See Gas purification****Detonators**

Gun-primers and detonators. Sci Am S 80:35 J1 17 '15

New safety detonating fuse; Cordouan detonant. II. Souder. II diag Am Inst Min 10 Bul 91:2547-56 O '14; Abstract. Eng M 48: 416-18 D '14; Discussion. Am Inst Min 10 Bul 100:895-902 Ap '15

Primer on explosives for metal miners and quarrymen. C. E. Munroe and C. Hall. pls U S Bur Mines Bul 80:29-46 '15

**Detroit, Michigan**

City plan for Detroit. II. H. Bennett. plans Am Inst Arch J 3:264-8 Jo '15

Re-planning in Detroit: report to the Board of street railway commissions by Barclay, Parsons and Klapp. II Am Inst Arch J 3: 268-70 Jo '15

## Detroit, Michigan—Continued

## Bridges

Closing Detroit-Superior arch. *Il Eng N* 74:813-14 O 21 '15

## Hotels

Hotel Statler, Detroit, Mich. *Il plans Arch & Bldg* 47:89-101 Mr '15  
Hotel Statler in Detroit. *W. S. Wagner. Il plans Arch Rec* 37:330-39 Ap '15

## Industries

Detroit's great growth due to its open shop policy. *L. W. Moffett. Iron Tr R* 57:143-7 J1 15 '15

## Lighting

Detroit's municipal lighting plant. *T. Wilson. Il plan Power* 40:832-6 D 15 '14

## Railroads

Economic value of terminal improvements at Detroit. *Ity Age* 59:739-40 O 22 '15  
Station and office building of the Michigan Central railroad at Detroit. *Il Arch & Bldg* 47:53-60 F '15

## Rapid transit

Detroit purchase negotiations. *Elec Ity J* 45:725 Ap 10 '15  
Detroit's urban transportation needs—present and future—set forth. *Eng Rec* 71:127-8 Ap 3 '15  
Report on Detroit traffic. *Elec Ity J* 45:664-6 Ap 3 '15

## Streets

Methods and cost of removing an asphaltic macadam road surface, reworking the old material and relaying it as asphaltic concrete. *(I. C. Dillman. Il diag Eng & Contr* 42:532-3 D 9 '14

## Water supply

Municipal pumping stations of Detroit. *T. Wilson. Il Power* 41:150-3 F 2 '15

## Detroit, Toledo &amp; Ironton railroad

Abstract of annual report. *Ity Age* 59:847 N 5 '15

## Detroit United railway

Detroit municipal ownership proposal. *Elec Ity J* 45:431 F 27 '15  
Statement of income, profit and loss. *Elec Ity J* 45:436-7 F 27 '15

## Dextrin

Modification of starch by gaseous hydrochloric acid. *F. C. Frary and A. C. Dennis. J Ind & Eng (Chem)* 7:211-18 Mr '15

## Diabetes

Diabetic triad. *Sci Am* 113:244 S 18 '15

## Dials. See Sundials

## Diamond drilling. See Drilling and boring (earth and rocks)

## Diaphragm method

Diaphragm method for the measurement of water in open channels of uniform cross-section. *C. L. Weidner. bibliog Il Wis U Bul Eng S* 8:1-72 no 1 '14; *Excerpta. Eng N* 72:532-4 S 10 '14; *Eng & Contr* 42:414-15 O 28 '14

## Diatasees

Quantitative extraction of diatasees from plant tissues. *R. W. Thatcher and (I. P. Koch. Am Chem Soc J* 36:2642-3 D '14

## Didymium

Fractional crystallization of the picrates of the rare earths of the didymium group. *L. M. Dennis and F. H. Rhodes. Am Chem Soc J* 37:807-15 Ap '15

## Die casting

Aluminum die casting a commercial achievement. *C. Pack. Metal Ind n s* 13:412-13 O '15; *Same. Foundry* 43:456-7 N '15; *Same. Iron Tr R* 57:1036-7 N 25 '15; *Same cond. Iron Age* 96:820 O 7 '15

Aluminum die castings. *A. B. Norton. Metal Ind n s* 12:503-4 I '14

Die-casting of white alloys. *J. C. Work. Sch Mines Q* 36:48-50 N '14

Die casting: the metal, its use and the gas appliance used. *C. E. Chapple. Il Am Gas Light J* 102:52-3 Ja 25 '15; *Same Metal Ind n s* 13:62-3 F '15

Die casting vs. machining. *J. E. Schipper. Il diag Automobile* 33:451-4 S 9 '15  
New die casting metal; Ampco bronze. *Met & Cham Eng* 13:931 D 1 '15  
Plating of the troublesome die-castings. *S. Herrick. Metal Ind n s* 13:373-4 S '15  
Precision castings. *M. Buckingham. Il diag Metal Ind n s* 13:11-13 Ja '15  
Successful nickel plating of die castings or articles made from sheet zinc. *C. H. Proctor. Metal Ind n s* 13:274 J1 '15

## Die holders

Forms of die holders. *diag Metal Ind n s* 13:100-1 Mr '15

## Die-sinking machines

Jackson duplex die-sinking machine. *Il diag Mach* 21:928-9 J1 '15

## Dielectrics

Dielectric properties of different insulating materials; abstract. *K. W. Wagner. diag Elec W* 65:1044-5 Ap 24 '15  
Effect of transient voltages on dielectrics. *F. W. Peek, Jr. Il Am Inst E I P Pro* 34:1695-1747 Ag '15  
Insulating properties of solid dielectrics. *II. L. Curtis. diag U S Bur Stand Bul* 11:359-420 My 10 '16; *Excerpt (Volume resistivity table). Elec R & W Elec N* 66:171 Ja 23 '15  
Investigation of dielectric losses with the cathode ray tube. *J. P. Minton. Il Am Inst E I P Pro* 34:1115-65 Jo '16; *Abstract. Elec W* 66:66 J1 10 '15  
Law of corona and spark-over in oil. *F. W. Peek, Jr. Gen Elec R* 18:821-7 Ag '15  
Volume resistivity and surface resistivity of insulating materials. *II. L. Curtis. diag Gen Elec R* 18:996-1001 O '15

## Dies

Automatic indexing multiple drawing die. *J. M. Stabel. Il diag Mach* 21:915-16 J1 '15  
Building precise dies on a rush order. *Il Iron Age* 55:1062-3 My 13 '15  
Deep drawing in combination dies. *Il diag Mach* 21:963-4 Ap '15  
Dies for drawing flanged shells. *E. P. Davis. diag Mach* 21:532-4 Mr '15  
Don'ts for drop-forged die hardeners and users. *W. L. Goodrich. Mach* 21:453 F '15  
Establishing number of operations for drawing cylindrical shells. *F. J. W. Sparkuhl. Mach* 21:720-32 My '15  
Forging machine dies. *J. Lee. diag Ry Age (Mech ed)* 89:37 Ja '15  
Forging machine die. *J. W. McDonald. Il diag Ity Age (Mech ed)* 88:630-40 D '14  
Making a ribbed die. *J. Leafstrom. diag Mach* 21:744 My '15  
Mechanical production of drop forging dies. *E. K. Hammond. Il Mach* 22:1-6 S '15  
Method for making and using piercing dies. *C. Dowseler. diag Mach* 21:581-2 Mr '15  
New method of polishing diamond dies. *diag Mach* 21:270 I '14  
Punch and die standards. *E. K. Hammond. diag Mach* 22:137-40 O '15  
Rectangular drawing and trimming. *J. M. Stabel. diag Mach* 22:44-7 S '15  
Repairing cracked dies. *II. J. Albrecht. diag Mach* 22:9 S '15

Small aluminum tubes. *J. P. Sheehy. Il diag Metal Ind n s* 13:55-6 F '15

Three recently developed die heads. *Il Iron Age* 55:134 Ja 14 '15

Tube forming die. *A. H. Wilson. diag Mach* 21:666-7 Ap '15

Universal link-cutting die. *II. Gelat. diag Mach* 22:60-1 S '15

See also Metal work; Punching machinery; Sheet metal work

## Diesel engines

Link-chainers oil engine. *Il diag Munic J* 39:905 Ja 24 '15

American Diesel engines; summary of different types. *Iron Age* 56:1170 N 18 '15

Breakdown of a Diesel engine at Oxford. *Engineer* 119:337 Ap 2 '15

Cracked and seized pistons on Diesel engines. *(I. E. Windeler. diag Power* 42:310-11 Ag 10 '16; *Abstract. Int Marine Eng* 20:416 S '15

Diesel and semi-Diesel engines. *Iron Age* 96:746-7 S 30 '15

**Diesel engines—Continued**

- Diesel engine and its applications in southern California. W. H. Adams. *diag* Am Soc M E J 37:621-8 N '15; Excerpts. *Iron Age* 96: 1813-14 D 2 '15; Discussion. *Am Soc M E J* 37:699-703 D '15
- Diesel-engine central station at Winchester, Ind.—cost of equipment. T. Wilson. *il Power* 41:562-4 Ap 27 '15
- Diesel engine day at the Panama-Pacific international exposition. *Iron Age* 96:111 J 1 '15
- Diesel engine defended. R. W. Crowley. *Power* 41:413 Mr 23 '15
- Diesel engine for the contractor—why not? H. D. Hammond. *il Eng Rec* 71:409-10 Mr 27 '15
- Diesel engine in America. M. Rotter. *diag* Power 42:524-7 O 12 '15
- Diesel-engine installation at Palo Alto. H. Haas. *il Power* 41:502-4 Ap 13 '15
- Diesel engine users' association. *diag* Engineer 120:86 J 1 23 '15
- Diesel engines for generator drive. G. Le-grand. *Am Inst E E Pro* 34:1815-18 Ag '15
- Diesel principle applied to small engines. *il diag Power* 41:162-5 F 2 '15
- Diesel-type engine in the United States. R. W. Crowley. *Klee W* 65:412-14 F 13 '15
- Diesel-type oil engine in European repute. R. W. Crowley. *Klee W* 65:665-7 Mr 13 '15
- Fairbanks-Morse internal-combustion engine. *il Eng & Min J* 100:358 Ag 28 '15; *Power* 42: 550-1 O 19 '15
- Heavy oil engine, its present status and future development. A. H. Goldingham. *il diag* Am Soc M E J 37:628-36 N '15; Excerpts. *Iron Age* 96:1313-15 J 1 2 '15
- How to select your prime mover. G. Fisk. *Iron Tr* 16:57:569-72 J 8 23 '15
- Large four-cylinder vertical Diesel engine of the Busch-Sulzer brothers-Diesel engine company, St. Louis. *il Klee R & W Klee'n* 66:41-2 Ja 2 '15; *Klee W* 64:1217 J 19 '14
- McIntosh & Seymour 500-hp. Diesel engine. F. L. Low. *il diag Power* 42:740-5 N 30 '15
- 1000 h.p. Diesel engine; abstract. J. Cochand. *diag* Am Soc M E J 37:115 F '15
- Panama-Pacific exposition. F. L. Low. *il diag* Power 42:261-6, 290-3, 341-2 Ag 21-8 7 '15
- Performance of Diesel engine pumping equipment of the Appleton, Wis., water works. *il plan Eng & Contr* 44:244-6 S 29 '15
- Reliability of Diesel engine doubted. R. Mueller. *Eng Rec* 71:500 Ap 17 '15
- Results of Diesel-engine operation at Hutchinson, Minn. T. Pitts. *il Klee W* 66:1029 N 6 '15
- Southwark-Harris Diesel engine. *il diag* Power 41:877-9 Je 29 '15
- Southwark-Harris valveless engine. *il Eng M* 49:supp-5-6 Ap '15
- Swedish type Diesel engine. *il Iron Tr* 16: 988 N 18 '15
- Torsional oscillations of an engine shaft; abstract. O. Mies. *diag Am Soc M E J* 37:406-7 J 1 '15
- Two-stroke-cycle semi-Diesel engines. *diag Klee W* 65:679 Mr 13 '15
- Vertical two-stroke-cycle Diesel engines. *il Klee W* 65:1303 My 8 '15

**Manufacture**

Manufacture of the Diesel engine; production processes and the plant of the Busch-Sulzer bro., St. Louis. C. J. Abell. *il diag* plan Iron Age 95:57-64 Ja 7 '15

**Testing**

Test of new type prime mover; Southwark-Harris crude oil engine. *il Iron Tr* 16:274-5 Ag 5 '15

Tests on a Diesel engine; abstract. W. S. Iurns. *il Am Soc M E J* 37:552-5 Ja '15

Tests on Diesel engines when running light; abstract. A. Balog. *Am Soc M E J* 37:404-6 J 1 '15

**Diesel engines, Marine**

Craig Diesel type marine oil engine. *il diag* Int Marine Eng 20:217-18 My '15

Defects and remedial of marine Diesel motors. T. L. Grainger. *Int Marine Eng* 20:316-17 J 1 '15

Diesel engine applied to marine purposes. C. Kloss. *il diag Power* 42:734-8 N 23 '15

Diesel engine propelled ship, Pacific; abstract. W. Kaemmerer. *Am Soc M E J* 37:601-2 O '15

Diesel motor tug Chickamauga. G. E. Nicholson. *il Int Marine Eng* 20:493-5 N '15

Duxford Diesel engine. Engineer 118:599-600; 119:4-6 D 25 '14-Ja 1 '15

First government-built Diesel engines. *Power* 42:738 N 23 '15

Large Diesel engine ships for marine navigation and their economic possibilities; abstract. W. Scholz. *Am Soc M E J* 37:228-30 Ap '15

Machinery of modern submarines. A. P. Chalkley. *il Sci Am* 113:264-4 J 1 3 '15

Marine semi-Diesel engines. *Sci Am S* 80:287 O 30 '15

Modern submarines in war and peace. S. Lake. *il diag Int Marine Eng* 20:450-6 O '15

Oil and suction producer gas engines for ship propulsion; abstract. *Am Soc M E J* 37:602 O '15

Operation of a marine Diesel engine. R. N. Percy. *Int Marine Eng* 20:209-11 My '15

Performance of Diesel-engined motor ships. *Int Marine Eng* 20:381 S '15

60 horsepower Nisco Diesel engine. *il Int Marine Eng* 20:522-3 N '15

Submarine power plant. A. Hoar. *il Sibley J* 30:59-63 N '15

Thermodynamics of the marine engine; abstract. J. P. Wentworth. *Int Marine Eng* 20:17 Ja '15

Two- vs. four-stroke-cycle marine Diesel engine. G. C. Davidson. *Power* 42:564-5 O 19 '15

**Diet**

Food for polar explorers. E. Shackleton. *Sci Am S* 79:36-7 Ja 16 '15

How much albumen is needed in our diet? M. Hinde. *Sci Am S* 79:327 My 22 '15

Idio salts for soldiers. *Sci Am* 113:358 O 23 '15

Vitamins and cooking. D. McCaskoy. *Sci Am* 113:379 O 30 '15

Vitamins, and their importance for the maintenance of health. Dr. Reinhardt. *Sci Am* 113: 238-9 S 11 '15

See also Nutrition

**Digestion**

Physiological activity of combined hydrochloric acid. J. H. Long. *Am Chem Soc J* 37:1333-47 My '15

See also Enzymes; Mastication

**Digestive ferments**

Comparison of methods for the determination of the proteolytic activity of pancreas preparations. J. H. Long and A. W. Barton. *Am Chem Soc J* 36:251-66 O '14

Dikes (engineering). See Embankments

**Dimethylpyrone**

Organic azonium compounds; dimethylpyrone-hydrochloride. H. N. K. Ibbrium. *Am Chem Soc J* 37:557-67 Mr '15

Dimmers. See Electric lamps, Tungsten—Control

**Dining car chairs**

Canadian Northern dining car chairs. *diag* Ity Age (Mech ed) 80:300 Je '15; *Ity Age* 80:272 Ag 13 '15

**Dining cars**

Steel passenger equipment for the Union Pacific. *il diag* Ity Age 68:1476-9 Ja 25 '15

See also Buffet cars

**Dinitrotyrosine**

Studies on nitrated proteins; the synthesis of 3,5-dinitrotyrosine. T. B. Johnson and E. K. Kohnmann. *Am Chem Soc J* 37:164-70 S '15

**Dinosaurs**

Tyrannosaurus, a cretaceous carnivorous dinosaur. B. Brown. *il Sci Am* 113:322-3 O 9 '15

Dip needle surveying. See Magnetic surveying

**Diphenylureachloride**

Action of diphenylureachloride on organic bases. W. M. Dehn and E. M. Platt. *Am Chem Soc J* 37:2122-30 S '15

**Dipotassium phosphate**

Conductivity study of the reaction between calcium nitrate and dipotassium phosphate in dilute solution. W. A. Withers and A. L. Pollard. *Am Chem Soc J* 37:1091-1105 My '15

**Dippers.** See Buckets**Dipping fluids**

Sheep dips in Uruguay. H. L. Spahr. *Textile World* 48:594 Mr '15

**Dipping fluids, Arsenical**

Blood-charcoal as a purifying agent for arsenic solutions previous to filtration. R. M. Chapin. *J Ind & Eng Chem* 6:1002-3 D '14

**Directories**

Portland street corner directories. *Munic J* 39:7 J1 '15

**Dirigibles.** See Balloons and airships**Disasters**

See also Eastland (steamship)

**Discount**

Annulment and bond discount. R. J. Bennett. *J Account* 19:405-24; 20:1-20 Je-J1 '15

Cash discount. S. Wallon. *J Account* 19:385-90 My '15

Discount on stock. S. Wallon. *J Account* 20:238-41 S '15

Tyranny of the engraver. A. S. Little. *J Account* 20:186-202 S '15

**Discoveries in science.** See Science**Diseases**

Diseases dangerous at different periods of life. *Sci Am* 8 79:149-50 Mr 6 '15

See also Tuberculosis; Typhoid fever; also subhead Diseases under various subjects, e.g. Nervous system—Diseases

**Diseases, Industrial**

Nystagmus (trembling of the eyes) of the miners. *Colliery* 35:505 Ap '15

Itchlike conditions on the hand. A. C. Key. *Eng & Min J* 99:28-9 Ja 2 '15

Recognizing vocations from the teeth. *Sci Am* 8 79:300 My 8 '15

See also Brass founders' ague

**Diseases of metals.** See Metals Diseases**Dishwashing machines**

Crescent electric dishwasher. *El Elec R & W Elec'n* 66:702-3 Ap 10 '15

Heavy-service electric dish washer. *El Elec W* 66:1110 N 13 '15

**Disinfection and disinfectants**

Destruction of flies and disinfection. *Sci Am* 8 80:112 Ag 14 '15

Disinfection of swimming pools with copper sulphate. *Sci Am* 8 80:352 N 27 '15

Steam disinfection for sewage on common carriers. *Eng Eng Rec* 71:43 Ja 9 '15

Sterilizing cutting oils. P. J. Artale. *Iron Age* 95:482 P 25 '15

Up-to-date disinfection. *Sci Am* 112:004 Je 19 '15

See also Antiseptics; Ozone

**Dislocations**

Device for treatment of dislocated and fractured lower limbs. *Sci Am* 113:364-1 O 23 '15

**Dissociation**

Can the dissociation theory be applied to solid solutions in steels? G. D. Campbell. *Am Chem Soc J* 37:2039-48 S '15

Densities and degrees of dissociation of the saturated vapors of the ammonium halides, and the related thermal data. A. Smith and R. H. Lombard. *Am Chem Soc J* 37:334-70 Ja '15

Dissociation of hydrogen into atoms. I. Langmuir. *Am Chem Soc J* 37:417-58 Mr '15

Dissociation of hydrogen into atoms. I. Langmuir and G. M. J. Mackay. *Am Chem Soc J* 36:1708-22 Ag '14

Electron conception of valence; the theory of electrolytic dissociation and chemical action. K. G. Falk and J. M. Nelson. *Am Chem Soc J* 37:1732-48 J1 '15

See also Chemistry, Physical; Electrochemistry; Electrolysis; Electrolytes; Electrons

**Distearin**

Phosphates of 2,3-distearin. R. R. Renshaw and R. R. Stevens. *Am Chem Soc J* 36:1770-2 Ag '14

**Distillation**

Adjustable burner support for condensation apparatus. H. B. Bishop. *El Ind & Eng Chem* 7:693 Ag '15

Advantageous form of still for the exact measurement of boiling point during fractional distillation. T. W. Richards and F. Barry. *Il Am Chem Soc J* 36:1787-91 Ag '14

Analytical distillation of petroleum. W. F. Rittman and R. W. Dean. *Eng J Ind & Eng Chem* 7:185-95, 751-60 Mr, S '15

Destructive distillation of Pacific coast kelps. D. R. Hougland. *J Ind & Eng Chem* 7:673-4 Ag '15

Distillation of water. G. W. McKee. *Il Am Gas Light J* 102:404-7-1-1 Ja 28 '15

Distilled feed water. C. F. Hirschfeld. *Eng M* 49:724-30 Ag '15

Emergent stem correction for thermometers in cresote oil distillation flasks. R. M. Wilhelm. *Eng U S Bur Stand Tech Pa* 49:1-21 '15

Experiments on the distillation of liquid air in a magnetic field. R. S. McBride. *Am Chem Soc J* 37:1715-18 J1 '15

Fractional distillation with regulated still-heads: cases in which the boiling-point curve passes through a maximum or a minimum. M. A. Rosanoff and C. W. Bacon. *Eng Am Chem Soc J* 37:301-9 P '15

Fractional distillation with regulated still-heads: distillation of ternary mixtures. M. A. Rosanoff, J. E. W. Schulze, and R. A. Dunphy. *Am Chem Soc J* 37:1072-9 My '15

Improved form of Kjeldahl distillation apparatus. A. D. Holmes. *Il Eng J Ind & Eng Chem* 8:1010-12; 7:693-4 D '14, Ag '15

Kjeldahl distillation apparatus. J. M. Pickel. *Il J Ind & Eng Chem* 7:787-9 S '15

Manufacture of gasoline by cracking heavy oils. *Sci Am* 8 79:283 My 1 '15

Method of finding the partial from the total vapor pressures of binary mixtures, and a theory of fractional distillation. M. A. Rosanoff, C. W. Bacon, and J. E. W. Schulze. *Am Chem Soc J* 36:1993-2004 O '14

New water still. *Il Eng Met & Chem Eng* 12:796 D '14

Partial vapor pressures of ternary mixtures of toluene, carbon tetrachloride and ethylene bromide. M. A. Rosanoff, J. E. W. Schulze, and R. A. Dunphy. *Am Chem Soc J* 36:2480-95 D '14

Pressure distillation of petroleum hydrocarbons. A. P. Bergey. *Il Eng J Ind & Eng Chem* 7:573-7 J1 '15

Separation of gases by fractional distillation in a vacuum at low temperatures. G. A. Barrell and L. W. Robertson. *J Ind & Eng Chem* 7:209-10 Mr '15

Study of the reaction of alkali salts of sulfonic acids with alkali phenolates by dry distillation. B. H. Nollan and L. C. Daniels. *Am Chem Soc J* 36:1885-91 S '14

Topping plants of California. A. E. L. Bell. *Il Eng Am Inst Min E Bul* 105:1769-99 S '15

Discussion. 108:2426 D '15

Two convenient forms of receiver for fractional distillations under diminished pressure. M. T. Bogert. *Eng J Ind & Eng Chem* 7:786-9 S '15

Water-distilling apparatus. C. E. Anderson. *Plan Power* 40:386 D 15 '14; *Munic Eng & Min J* 99:150 Ja 16 '15

Water distilling apparatus. *Il Met & Chem Eng* 13:704 O 1 '15

See also Coal distillation; Coal-tar products; Essential oils; Pent distillation; Wood distillation

**Distilled water.** See Water, Distilled**Distortion factors**

Distortion factors. F. Hedell. *Il Town and C. L. Swisher. Am Inst E* 10 Pro 34:1059-73 Je '15; Abstract. *Eng W* 66:7-8 J1 3 '15

**District heating.** See Heating from central stations**District heating association, National.** See National district heating association**Dithiourimido-acetylacetone**

Constitution of the so-called dithiourimido-acetylacetone. W. J. Hale. *Am Chem Soc J* 37:1544-52 Je '15

**Diving, Submarine**

- All-metal diving dress. *Il* *diag* Engineer 118: 554-5 D 11 '14  
 Deep diving experiments and the records at Honolulu. *Eng* N 73:796 Ap 22 '15  
 Effect of pressure on the diver. *Il* *Sci* Am 113: 61+ J1 17 '15  
 Raising the F-4. J. F. Springer. *Il* *Sci* Am 112:355+ Ap 17 '15  
 Salvage work on the Empress of Ireland. R. C. Skerrett. *Il* *plan* *diag* *Int* *Marine* *Eng* 20: 60-2 F '15

**Dixie highway**

- Governors to control Chicago-Miami road. *Hornet* *Age* 35:457 Ap 7 '15

**Docks**

- Balboa docks. *Il* *Sci* Am 112:48 Ja 9 '15  
 Barge canal terminal. *Il* *diag* *Int* *Marine* *Eng* 20:114 Mr '15  
 Concrete cribs used successfully in dock construction at Victoria. *Il* *diag* *plans* *Eng* *Rec* 72:165-7 Ag 7 '15  
 Concrete pile and cylinder foundations at Charleston. *Il* *diag* *Eng* N 74:926-9 N 11 '15  
 Jacksonville municipal docks nearing completion. *Eng* N 74:1099 D 2 '15  
 Kiel; its naval and engineering features. A. W. Metcalfe. *diag* *Engineer* 120:50-2 J1 16 '15; *Same* *cond.* *Sci* Am 8 80:234 O 9 '15  
 Municipal dock for St. Louis, Mo. *Eng* N 74: 1101 D 2 '15  
 New coal dock for the Cincinnati, Hamilton & Dayton at Toledo. *Il* *plan* *Rec* *Age* 59:273-4 Ag 13 '15; *Same*. *Rec* 72:226-9 Ag 21 '15; *Same* *cond.* *Eng* *Rec* 72:163-4 Ag 7 '15  
 New graving dock at South Shields. *Il* *diag* *plan* *Engineer* 120:154-6, 158 Ag 13 '15  
 Pearl harbor dry dock. F. R. Harris. *Eng* *Rec* 71:57-8 Ja 9 '15  
 Pearl harbor dry dock; abstract. H. R. Stanford. *Am* *Soc* M 13 J 37:13-11 J1 '15  
 Pennsylvania coal dock at Sandusky. *Il* *plan* *Rec* *Age* 57:1189-91 D 25 '14  
 Plan for building Pearl harbor drydock near Honolulu. *Il* *Eng* *Rec* 71:82-4 Ja 16 '15; *Eng* N 73:88-9 Ja 14 '15  
 Repairs to the gates at the 70-foot entrance to the Tyne docks. *Il* *Engineer* 120:412, 418 O 29 '15  
 Toledo coal dock built in record time. *Il* *plan* *Eng* N 74:520-2 S 9 '15  
 Torpedo-boat berth at the Charleston navy yard. *Il* *plan* *Eng* N 74:872-3 N 4 '15  
 Two new Crandall railway dry docks. *Il* *Int* *Marine* *Eng* 20:160-7 Ap '15  
*See also* Freight handling; Harbors; Ports; Wharves

**Domes**

- Concrete dome for the new Technology buildings, Cambridge, Mass. *Il* *Eng* N 74:385-6 Ag 26 '15  
 Design of 152-foot steel-framed dome. A. W. Earl and T. F. Glace. *Il* *diag* *Eng* *Rec* 70: 451-4, 482-4 O 24-31 '14; *Same*. *Eng* & *Contr* 42:314-20 S 30 '14  
 Designing a steel dome for the horticulture palace at the Panama-Pacific International exposition. A. W. Earl and T. F. Glace. *diag* *Eng* N 74:208-12 J1 29 '15  
 Framing of the dome of the palace of horticulture at the Panama-Pacific International exposition. A. W. Earl and T. F. Glace. *Il* *diag* *Eng* N 74:112-15 J1 16 '15  
 New Traymore hotel at Atlantic City. *Il* *diag* *Eng* N 74:21-2 J1 1 '15  
 Octagonal framed dome, San Francisco auditorium. *Il* *diag* *Eng* N 73:773-5 Ap 22 '15  
*See also* Roofs

**Domestic appliances**

- Domestic fuel appliances from the consumer's point of view. *Am* *Gas* *Light* J 102:70-1, 74-6 F 1 '15

*See also* Gas appliances**Domestic engineering**

- Science of domestic engineering. T. J. Claffy. *Dom* *Eng* 70:7-8 Ja 2 '15

*See also* Building; Heating; Lighting; Plumbing; Sanitary engineering; Ventilation**Domestic engineering (periodical)**

- 25th anniversary of Domestic engineering. J. K. Allen. *Dom* *Eng* 69:885-8 D 26 '14

**Domestic science**

- Measurements for the household. *Il* *U* *S* *Bur* *Stand* *Circ* 55:1-149 '15; *Abstract* (*Efficiency in the household*). H. T. Wade. *Sci* Am 113: 448-9 N 20 '15

*See also* Apartment houses; Diet; Electricity in the home; Food; Fuel; Furniture; Gardens; Heating; House decoration; Kitchens; Laundry; Menu cards; Sanitation; Ventilation**Dominican republic**

- Minerals of Santo Domingo. F. L. Garrison. *Il* *Eng* & *Min* J 99:641-4 Ap 10 '15

**Doors**

- Electric control for doors. *Il* *Elec* *W* 68:1049 N 6 '15  
 Modern sliding parlor door. C. J. C. Phillips. *diag* *Eng* *Age* 37:49-51 Je; 29-30 J1 '15  
*See also* Architecture; Screen doors

**Doorways**

- Colonial architecture in Connecticut. W. S. Russell. *Il* *diag* *Arch* *Rec* 38:672-80 D '15  
 Door guard for motor trucks. *diag* *Int* *Eng* 15:72 Ag '15  
 Doorway, Bartol-Atkinson house, Newburyport, Mass. built in 1805, measured and drawn by G. Robb. *Brick* 24:pl 10 O '15  
 Entrance detail, Escudais Manor, Sabana, Spain erected in the XVth century. *Il* *Brick* 24:266 N '15  
 Modern colonial doorways. R. Griswold. *Il* *Arch* *Rec* 38:216-52 Ag '15

**Dorr agitator**

- Feasibility of continuous causticizing. *Il* *Met* & *Chem* *Eng* 13:514-15 Ag '15  
 Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. *Il* *J* *Ind* & *Eng* *Chem* 7:129-30 F '15; *Same*. *Met* & *Chem* *Eng* 13:97-8 F '15

**Dorr classifier**

- Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. *Il* *diag* *Met* & *Chem* *Eng* 13:55-9 Ja '15; *Same*. *J* *Ind* & *Eng* *Chem* 7:119-22 F '15

**Dorr thickener**

- Arizona copper co.'s Dorr thickener. D. Cole. *Il* *diag* *Eng* & *Min* J 100:131-4 J1 24 '15  
 Intermitent discharge on Dorr thickener. *Eng* & *Min* J 100:639 O 18 '15  
 Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. *Il* *diag* *J* *Ind* & *Eng* *Chem* 7:123-6 F '15; *Same*. *Met* & *Chem* *Eng* 13:91-4 F '15

**Double houses**

- Double house for a 50 ft. lot. *Il* *plans* *Ind* *Ag* 37:42-4 N '15

**Douglas fir**

- Distillation of Douglas fir at high temperatures. R. Tremper. *J* *Ind* & *Eng* *Chem* 7: 926-7 N '15  
 Douglas fir for paving blocks. O. P. M. Goss. *Eng* N 74:774-6 O 21 '15  
 Protest against condemnation of treated Douglas fir. E. M. Horrocks. *Eng* *Rec* 71:107 Ja 23 '15

**Draft**

- Air intakes increase furnace capacity. *diag* *Rec* *Age* 57:4041-2 S 25 '15  
 Draft in furnaces and flues. E. C. Bailey. *diag* *Power* 42:638-42 N 9 '15  
 Draft readings on a Hirling boiler. S. H. Viall. *diag* *Power* 41:44-5 Ja 12 '15  
 Measurement of draft. C. F. Hirschfeld. *diag* *Power* 42:370-2 S 14 '15  
 Study of draft in boilers. C. F. Hirschfeld. *diag* *Power* 42:198-7 Ag 10 '15  
 What causes faulty chimney draft. *Il* *diag* *Metal* *Work* 84:577 N 5 '15  
 Why's of boiler draft. C. F. Hirschfeld. *diag* *Power* 41:675-9 My 18 '15  
*See also* Chimneys; Dampers; Firing; Locomotives—Draft; Mechanical draft; Mine ventilation; Ventilation

**Draft, Mechanical. See Mechanical draft****Draft gages**

- Ellison combination differential draft gage. *Il* *Power* 41:229 F 16 '15  
 Recording power plant operations. J. C. Smallwood. *Il* *diag* *Eng* *M* 50:41-3 O '15



**Draft gears**

- Cost of maintenance of equipment: a record of the Waugh draft gear. *Ity* 11 56:66-7 Jan 9 '15  
 Draft gear problem. *It*, V. Crandall. *Ity* Age (Mech ed) 88:612-13 D '14  
 Draft gear problem. *It*, A. Murray. *diag* *Ity* Age (Mech ed) 89:498 O '15  
 Friction spring draft gear. *diags* *Ity* Age 58: 832 Ap 16 '15  
 New York municipal car--draft gear. *diags* *Ilec* *Ity* J 44:1380-1 D 28 '14  
 Record of cost of maintaining car draft appliances. *Ity* 11 56:291 F 27 '15

**Draft tubes. See Turbines****Drafting boards**

- Drafting table for fieldwork. *C. P. Bernard*. *It* Eng & Min J 100:304 S 4 '15  
 Field drafting table. *W. L. Webb*. *diags* Eng N 73:828 Ap 29 '15  
 Method of holding long drawings. *J. B. Nelson*. *diags* Mach 22:53 S 15  
 Simplex parallel attachment. *It* *diag* Mach 21:102-2 Ar '15

**Drafting instruments. See Drawing instruments****Drafting room practice**

- Automobile drafting room. *E. W. Weaver*. *It* *diags* Horseless Age 31:222-4, 256-8, 297-8, 332-5, 368-70 Ag 5-8 2 '14  
 Camera, vs. the pantograph. *H. A. Williamson*. *diags* Colliery 35:288-91 Jan '15; *Excerpt*. Eng M 48:901-3 Mr '15  
 Checking drawings--how and why. *C. P. Scribner*. Mach 22:143 O '15  
 Drafting room reforms. *E. H. Fish*. *diags* Eng M 48:752-5 F '15  
 Sectional views of ribs and symmetrical parts. *C. L. Svensen*. *diags* Mach 21:790-1 Jo '15  
*See also* Drawing instruments; Machinery—Design; Mechanical drawing

**Drafts**

- Cheques and drafts. *S. Walton*. *J* Account 20: 230-3 S '15

**Draftsmen**

- Underrated contributor to steel construction: the detailer. *H. Fleming*. Eng N 71:653-1 S 30 '15

**Drain tile**

- Advertising and selling methods for concrete drain tile manufacturers. *J. J. Commons*. Concrete Cem 7:27-8 J1 '15  
 Investigation of the durability of cement drain tile in alkali soils. *H. J. Wig* and *G. M. Williams*. *diags* *pls* U S Bur Stand Tech Pa 44:1-56 '15; *Abstract*. *J* Fr Inst 179:351-6 Mr '15; *Abstract*. Eng Rec 72:220 Ag 21 '15; *Excerpt*. Concrete Cem 7:145-7 O '15  
 Investigation of the effects of alkali on concrete drain tile near Lake Park, *Ill.* *C. E. Sims*. Concrete Cem 6:278-81 Jo '15  
 Proposed standard specifications and recommended practice for drain tile and tile drain construction. Eng & Contr 42:181-3 Ag 19 '14  
 Sewer tile of concrete. *B. B. Hood*. *It* Eng & Min J 100:188 J1 31 '15  
 Size of drain tile as determined by Maryland experience. *J. R. Hawwell*. Eng & Contr 44:60 J1 21 '15  
 Subdrainage of brick-paved streets. *Lakewood, Ohio*. *R. A. Fisher*. *diags* Eng N 74:657-8 S 18 '15  
 Tile drains instead of small culverts on highways. *E. O. Nelson*. Eng N 73:1083-4 Jo 3 '15

**Drainage**

- Combination concrete road and flood channel. *Los Angeles county, Calif.* *R. Bennett*. *It* *diags* Eng N 73:42-3 Ja 7 '15  
 Construction methods and plant for diversion and drainage works for Little River drainage district in Missouri. Eng Rec 70:612-14 D 5 '14  
 Cost of and profits from tile underdrains. *R. D. Marsden*. Eng & Contr 44:21-2 J1 7 '15  
 Cost of drainage pumping in southern Louisiana. *C. W. Okey*. Eng N 74:788-5 O 14 '15  
 Design of drainage ditches, with diagrams. *W. H. Poe*. Eng & Contr 43:439-41 My 19 '15  
 Difficulties of drainage-ditch contractors. Eng N 73:632-3 Ap 1 '15  
 Ditch digging by blasting. *F. W. Wilson*. *It* Eng & Contr 44:160 Ag 25 '15

- Drainage pumping plant with variable-speed drive. *It* *diags* Eng N 74:581-3 S 23 '15  
 Draining a swamp by air lift. Eng & Min J 100:402 S 4 '15  
 Draining embankments in Missouri. *It* *Ity* Age 58:1338-9 Jo 18 '15  
 Draining land by wells; concrete drain head. *diag* Eng N 72:1169 D 10 '14  
 East side levee and sanitary district. *T. N. Jacob*. *It* *diags* Assn Eng Soc J 55:1-11 J1 '15  
 Excavating machinery used in land drainage. *D. L. Yarnell*. *bibliog* *It* *diags* U S Agric Bul 300:1-39 '15  
 Excavating plant for heavy drainage work in Arkansas. *It* Eng Rec 71:11 Jan 9 '15  
 Formula for computing the run-off depth to be expected from any simple drainage area. *S. W. Prescott*. Eng & Contr 44:22 J1 7 '15  
 How Carson lake was drained. *H. C. Westep*. map *Iron Tr* R 56:128-9 Jan 14 '15  
 Largest electric drainage pumping plant. *A. M. Shaw*. Eng N 74:801-5 O 21 '15  
 Little River drainage district. map Eng N 73:519-21 Mr 18 '15  
 Maintenance of drainage ditches. Eng N 73: 881-2 My 6 '15  
 Method and cost of making a drainage survey for the Washington Bayou drainage district, Mississippi. *C. W. Mellin*. map Eng & Contr 44:92-5 Ar 4 '15  
 Method of computing run-off in draining irrigated lands. *H. C. Miller*. Eng & Contr 44: 150-1 Ag 25 '15  
 New type of gate for regulating adjacent water levels operates automatically. *diags* Eng Rec 71:301-3 Mr 6 '15  
 Novel method of draining a swamp for an earth fill. *It* Eng N 71:897 N 4 '15  
 Plans for a typical condition of Mississippi bottom land drainage. map Eng & Contr 43: 490-1 Jo 2 '15  
 Reducing the cost of drainage excavation. Eng Rec 70:693-4 D 26 '14  
 River improvement for public health reclaiming 10,000 acres of fertile land. *R. W. Sherman*. *It* map Eng Rec 71:738-9 Jo 12 '15  
 Unwatering Carson lake. *L. L. Dayenport*. *It* map Eng & Min J 98:1065-70 D 19 '14  
 Why drainage of irrigated lands is necessary, and how the problem is handled. *D. W. Murphy*. *It* Eng Rec 72:356-8 J1 10 '15; *Abstract*. Eng M 50:464-5 D '15  
*See also* Drain tile; Irrigation; Mine drainage; Roads—Drainage; Sewerage

**Drainage, House**

- Modern design in house drainage systems. *A. J. McDonald* and *W. H. Cramer*. *diags* Metal Work 83:769-71 My 28 '15

**Draughting room practice. See Drafting room practice****Drawbacks**

- More liberal drawback laws required. *Ilec* W 65:254 Jan 23 '15

**Drawbridges**

- Automatic drawbridge signal. *diag* Eng Rec 70:690 D 19 '14  
 Canadian Pacific draw span over the Lachine canal. *It* *Ity* Age 59:239 Ag 6 '15  
 Center bearing, machinery and gates. Congress street swingbridge, *Troy, N. Y.* *diags* plan Eng N 73:804-5 Ap 29 '15  
 Congress street bridge across the Hudson river at Troy, *N. Y.*; structural features. *H. W. Hodge*. *diags* Eng N 73:574-5 Mr 25 '15  
 Design, construction and detailed costs of the Richelieu river bridge, *Lacolle Junction, Quebec*. *It* *diags* Eng & Contr 42:542-5, 585-9 D 2, 23 '14  
 Double-dock swingbridge floated in place. *It* Eng N 74:487 S 2 '15  
 Draw span of Harlem river bridge floated to place. *It* Eng Rec 72:258-9 S 4 '15  
 Electricity in construction of new Portland, *Me.*, bridge. *Ilec* *It* & W *Ilec* N 67:229 Ag 7 '15  
 Energy required for turning a 310-ft. bridge across the Harlem river. *It* *Ilec* W 68:567 O 18 '15  
 New bridge of the Chicago, Burlington & Quincy R. R. over the Missouri river at Kansas City, *Mo.* *diag* Eng & Contr 44:170 S 1 '15

**Drawbridges—Continued**

- New swing bridge over the Nile at Cairo. *Il* diags Engineer 120:270-2, 274 S 17 '15  
 Removable fixed bridge. *Il* Eng N 73:1326-7 Je 24 '15  
 Renewing heavy swing span by floating into place; old North Western bridge in Milwaukee removed and new span weighing 800 tons placed in one day. *Il* plan *Ry* Ago 58:836-8 Ap 16 '15

*See also* Bridges, Bascule; Bridges, Lift

**Drawing**

*See also* Architectural drawing; Design, Decorative; Geometrical drawing; Mechanical drawing; Perspective; Topographical drawing

Drawing, Mechanical. *See* Mechanical drawing

Drawing, Topographical. *See* Topographical drawing

**Drawing Instruments**

- Combination drafting instrument. *Il* Iron Age 95:1402 Je 24 '15  
 Involute gear tooth forming device; simple method of laying out a template or forming cutter. *G. Luck*, diags Mach 21:716-17 My '15

Drawing room practice. *See* Drafting room practice

**Dredges**

- Dredges and dredging operations. *Int* Marine Eng 20:238-9 Je '15  
 Electric hydraulic dredge for Chuyahoga river improvements. *Il*, *Flora*, *Il* Eng & Contr 43:110-11 F 3 '15; *Same*, *Int* Marine Eng 20:245-6 Je '15  
 Electric suction dredge with special cutter for gumbo. *Il* Eng N 73:220-1 F 4 '15  
 Electrically operated hydraulic dredge. *Eng* N 73:889 My 6 '15; *Il* *Int* Marine Eng 20:261-2 Je '15  
 Flume-type elevator dredges in Alaska. *L. H. Eddy*, *Il* Eng & Min J 99:1120-30 Je 26 '15  
 42-inch hydraulic dredge *Foyers*. *Il* *Int* Marine Eng 20:256-7 Je '15  
 Four-yard government dipper dredges. *Il* *Int* Marine Eng 20:247-9 Je '15  
 Government dredges for improving the Arkansas river. *Il* *Int* Marine Eng 20:252-3 Je '15  
 Latest United States dredges. *P. M. Bruner*, *Il* *Int* Marine Eng 20:240-3 Je '15  
 Most powerful dipper dredge in the world: Gamboa and Paraiso. *Il* *Int* Marine Eng 20:254-5 Je '15  
 Pump and cutter of electric dredge. *Il* Eng N 73:1079 Je 3 '15  
 Recent Mallett pipe line and sea-going hydraulic dredges. *Il* *Int* Marine Eng 20:253-4 Je '15  
 Reconstruction of U. S. dredge *Barnard*, *J. H. Peyton*, *Il* *Int* Marine Eng 20:244 Je '15  
 Semi-Diesel engines and locomotives for Alaskan dredges. *Il* Eng & Min J 99:644 Ap 10 '15  
 Steam-electric-driven dredge for the Philippines. *Il* Eng & Min J 99:898-900 My 22 '15  
 10-yard dipper dredges on the Cape Cod canal. *Il* *Int* Marine Eng 20:255-6 Je '15  
 Twin-screw bucket ladder dredger and a single-screw hopper barge for Tasmania. *P. C. Coleman*, *Il* *Int* Marine Eng 20:250-1 Je '15  
 Typical ships. *Il* plan (supp) Engineer 118:573-5 D 18 '14

*See also* Snag boats

**Dredging**

- Cost data on the work of improving the Naposnet river in Massachusetts. *R. M. Blake*, *Il* Eng & Contr 43:34-6 Ju 13 '15  
 Cost of electric dredging for land reclamation, San Diego, Cal. *L. L. W. Allison*, Eng & Contr 44:96-6 Ag 4 '15  
 Dredge dipper rigged as drag. *O. S. Proctor*, *Il* Eng Rec 71:119-20 Ja 23 '15  
 Dredging sudd on the river Nile. *Il* Eng N 73:513-14 Mr 18 '15  
 Dredging work on the Panama canal slides. *W. G. Comber*, *Il* maps Eng N 73:753-7 Ap 22 '15  
 Filling and dredging for a Jersey City freight terminal. *Il* diag map Eng N 73:1216-18 D 17 '14

Resulting dredged areas in Victoria. Eng & Min J 98:1136-7 D 26 '14

*See also* Gold dredging

**Dredging machinery**

- Gravel dredge which delivers graded materials. *A. Gottschalk*, *Il* Eng Rec 70:652 D 12 '14  
 Minneapolis dredging pump operates electrically. *Il* Eng Rec 73:136-7 Ji 31 '15  
 Oil-engine dipper dredge. *Il* Eng N 73:173 Ja 28 '15  
 Special cutter head on dredge working in hard material. *J. H. Gandolfo*, *Il* Eng N 74:990 N 18 '15

*See also* Dredges; Excavating machinery

**Drilling and boring (earth and rocks)**

- Difficulties overcome in sinking a deep well. *P. B. Green*, diag Eng N 74:450-2 S 2 '15  
 Drill outfit for light blast holes and for rock soundings. *Il* diags Eng Rec 71:725-6 Je 5 '15  
 Drilling for oil. *Sci* Am S 80:199 S 25 '15  
 Drilling 30-in. wells for irrigation. *Il* Eng N 73:924-5 My 13 '15  
 Evolution of drilling rigs. *It*, *B. Woodworth*, *Il* diags Am Inst Min 10 Bul 107:2247-2312 N '15  
 Heavy deep bore hole. *E. B. Wilson*, Collory 36:90-1 S '15  
 Improved methods of deep drilling in the Coalina oil field, California. *M. J. Lombardi*, *Il* diag Am Inst Min 10 Bul 98:200-15 J '15  
 Modern rotary drill. *Il*, *It*, *Hughes*, *Il* diags Am Inst Min 10 Bul 99:629-35 Mr '15; *Same* cond. *Eng* N 73:928-9 My 13 '15; *Abstract*, *Ind* Eng 15:59-60 P '15; *Abstract*, *Collory* 36:522 My '15; *Discussion*, *Am Inst Min* 10 Bul 101:163 My '15  
 Portable drilling rig on road and street work—performance records in cutting trenches and cleaning reservoirs. *Il* *Munic* Eng 49:123-4 S '15  
 Rock work in coal mines. *Il* diags Collory 35:237-40 D '14  
 Sampling of churn-drill prospect holes. *J. C. Moses*, diags Eng & Min J 100:301-4 Ag 21 '15  
 Scheme of diamond drilling at White Pine. *Eng* & Min J 100:078 O 23 '15  
 Subaqueous rock excavation. *C. C. Phelps*, *Il* diags Eng N 74:908-73, 1020-4, 1062-7 N 18-1 '15  
 Successful winter drilling on the barge canal. *W. R. Brown*, diag Eng N 74:260-7 Ag 5 '15  
 Sullivan air-fed drifter. *Il* Eng & Min J 100:887 N 27 '15  
 Tripod for handling long drill-steel. *L. B. Rolfenelder*, *Il* Eng & Min J 99:490 Mr 13 '15  
 Use of mud-laden water in drilling wells. *L. N. Knapp*, diags Am Inst Min 10 Bul 96:2783-93 D '14; *Discussion*, 101:1151-7 My '15  
 Wash borings and railroad valuation work. *Il* Eng Rec 71:776 Je 19 '15

*See also* Rock drills; Shaft sinking

**Cost**

- Churn-drilling costs. *C. H. Palmer, Jr.*; *H. P. Bowen*, Eng & Min J 99:20-1 Ja 2 '15  
 Churn-drilling costs, Sacramento hill, Arizona. *A. Notman*, *Il* map Am Inst Min 10 Bul 104:1677-90 Ag '15  
 Comparative costs of rotary and standard drilling. *M. L. Roqua*, Am Inst Min 10 Bul 98:217-19 F '15; *Summary*, Eng N 73:943 My 13 '15  
 Cost of drilling with well drilling machines in ore prospecting. *C. H. Palmer, Jr.*, Eng & Contr 43:202-3 Mr 3 '15  
 Drilling costs in potash prospecting. *R. B. Fries*, Eng & Min J 100:108-9 Ji 17 '15  
 Method and cost of making test borings for the Winnipeg Shoal lake aqueduct. *D. L. McLean*, *Il* diags Eng & Contr 43:316-18 Ap 7 '15  
 Tests of rock drills at North Star mine, California. *It*, *It*, *Hedford* and *W. Haggue*, *Il* Am Inst Min 10 Bul 92:1807-16 Ag '14; *Same* cond. *Eng* & Min J 98:255-7 Ag 8 '14; *Same* cond. *Eng* Rec 70:374 O 3 '14; *Same* cond. *Eng* & Contr 42:463-5 N 11 '14; *Excerpt*, *Eng* & Min J 98:439 S 5 '14; *Discussion*, *Am Inst Min* 10 Bul 95:2750-1 N '14

**Drilling and boring (metal working, etc.)**

Cost of drilling anchor-bolt holes for the Que-bee bridge. C. C. Phelps. *II Eng N 73:219 F 4 '15*

Drill fixtures for motor truck parts. C. T. Schrofer. *diag Horsesless Age 34:818-19 D 2 '14*

Drilling speeds. *Mach 21:410-11 Ja '15*

Speed record in drilling. *II Mach 21:305-6 D '14*

*See also* Machine shop practice

**Drilling and boring machinery**

Adjustable-spindle boring machine. *II Iron Age 95:903 My 6 '15*

Automatic machine for drilling drills. *II Iron Age 95:720 Ap 1 '15; Iron Tr R 56:680 Ap 1 '15*

Automatic power feed drilling machine of the Cincinnati pulley machinery company. *II Iron Age 94:1291 D 3 '14*

Auxiliary drilling machine heads. *II Iron Age 95:291 F 4 '15*

Bonds four-spindle drill. *II diag Mach 22:151-5 O '15*

Boring machine for car wheels. *II Iron Tr R 55:1180 D 24 '14*

Center head boring mill. *II Iron Age 95:236-7 Ja 28 '15*

Clearance drills for counter-sinking holes. J. M. Stabel. *Mach 21:1005-6 Ag '15*

Close quarter drill. *Iron Tr R 57:233 Ag 5 '15*

Cutter and keyseat drill. *II Rly Age (Mech ed) 89:486 S '15*

Doing in the work on all-geared pump drills. *II diag Mach 21:740 2 My '15*

Double economy in power feed drill. *II Automobile 32:465 Mr 11 '15*

Drill jig for machining half holes. *diag Mach 21:106 Ja '15*

Drill motor extensions. V. T. Kropidlowski. *diag Rly Age (Mech ed) 89:579 N '15*

Drill press tools. A. A. Bertrand. *diag Mach 21:282 Ag '15*

Drilling a deep hole. D. A. Hampson. *II diag Mach 21:1012-13 Ag '15*

Drilling cutter pin holes. *II Mach 21:68 Ap '15*

Electrical appliances for workshops. *II Engineer 119:516 Je 4 '15*

Facing tool for drilling machines. *II Iron Age 95:293 Ja 7 '15*

Gang drilling machine for structural steel. *II Eng N 74:1056 N 26 '15*

Heavy cutting on a boring mill. A. A. Dowd. *diag Iron Tr R 56:281-3 F 4 '15*

Heavy duty drill press. *II Iron Tr R 56:1107 Je 3 '15*

Heavy duty radial drilling machine. *II Iron Age 95:237 Jl 29 '15*

Heavy multiple drilling machine developed by the National automatic tool company, Richmond, Ind. *II Iron Age 94:1277 D 3 '14*

High speed bench drill. *II Ind Eng 11:406-7 O '14*

High-speed drill with greater twist. *Iron Age 95:895 Ap 22 '15*

High speed radial drill. *II Rly Age (Mech ed) 89:593 N '15*

How the chisel point of a drill wears. R. Pollakoff. *II Mach 21:567-8 Mr '15*

Improved radial drilling machines, made by Kendall & Gent, Ltd., Manchester. *II Engineer 118:538 D 4 '14*

Langsdorff shrapnel machines. *II Mach 21:674-5 Ap '15*

Locomotive frame drill. *II Rly Age (Mech ed) 88:549-50 D '14*

Machine for boring driving boxes. E. C. Gilman. *II Rly Age (Mech ed) 89:138-9 Mr '15*

Micrometer dial for an old boring mill. W. Whitley. *diag Mach 22:62 S '15*

National-Acme single and multiple drilling machines. *II Mach 22:147-51 O '15*

New portable electric drill. *II Elec R & W Elec'n 66:37-8 Ja 2 '15*

Niles-Rement-Pond boring mill. *II Mach 21:510-11 F '15; Rly Age (Mech ed) 89:548 O '15*

Pipe drilling machines. *II Iron Age 94:1490 D 31 '14; Iron Tr R 56:1179 D 24 '14*

Portable Scotch radial drilling machine. *II Iron Age 95:980 O 25 '15*

Quick change sensitive drilling machine. *II Iron Age 94:1528 D 21 '14*

Quick speed changes in new drill press. *II Automobile 32:122 Mr 1 '15*

Radial drilling machine of the Willmarth tool works. *II Iron Age 94:1487 D 31 '14; Iron Tr R 55:1227-8 D 31 '14; Mach 21:430-1 Ja '15; Rly Age (Mech ed) 89:45-6 Ja '15*

Radial drilling machine with 2-ft. arm. *II Iron Age 95:323 O 21 '15*

Rapid automatic drill. *II Iron Tr R 55:1184 D 21 '14*

Reboring air pump cylinders. J. A. Johnson. *diag Rly Age (Mech ed) 89:138 Mr '15*

Rockford auxiliary drill heads. *II Mach 21:517-18 F '15*

Rockford box column upright drilling machine. *II Iron Age 95:215 Jl 29 '15; Mach 21:1022-3 Ag '15*

Semi-automatic four-spindle drill press. *II diag Iron Age 95:711-5 S 30 '15*

Ship machine co.'s sensitive drill press. *II Mach 21:427 S Ja '15*

Special system of boring tools. *II Iron Age 95:321 S 2 '15*

Test of electric drilling machines. *II Iron Age 95:1241 N 25 '15*

Tool for reboring cylinders run by air boring machine. W. Hazore. *II Eng Rec 72:239 Ag 21 '15*

Twin machines for Packard rear axles. *II Automobile 32:581 Ap 15 '15*

Twist drill design. E. C. Peck. *Mach 22:64 S '15*

Two new electric tools; combination upright drilling and bench printing machine and high speed drill. *II Iron Age 95:1006-7 My 6 '15*

Two useful types of boring bars. E. Server. *diag Mach 22:59 S '15*

*See also* Boring; Machine tools; Reamers

**Testing**

Test of drills for cast iron. A. W. Drayshay. *Engineer 119:62 Ja 15 '15*

**Drinking fountains**

Design for detanking water. R. W. Palmer. *II diag Elec Rly J 16:281 Ap 11 '15*

Drinking fountain for a mine. D. E. Charlton. *diag Eng & Min J 100:677 S O 23 '15*

Gaining after installing fountain business. *II Metal Work 83:18-9 Ja 1 '15*

Inexpensive drinking fountain guard. *II Elec Rly J 16:156 Jl 21 '15*

Sanitary drinking fountain for passenger cars. *II Rly Age (Mech ed) 89:17 Ja '15; Sams. Rly Age 55:139-40 Ja 22 '15*

Waste-preventing fountain for drinking and horse watering. Pomerville, Mass. F. E. Merrill. *II Eng & Contr 42:400 N 18 '14*

**Drinking water system.** *See* Water supply for factories

**Driving boxes.** *See* Locomotives; Driving boxes

**Drop head.** *See* Kubbisauri

**Drops**  
Laws of efflux of drops from capillary orifices; abstract. E. Vaillant. *Am Soc M 16 J 37: 407-8 Jl '15*

**Drug trade**  
British India. *II S Ap Conn Rep 72:286-9 '15*

War and our chemical industries. C. A. West. *J Ind & Eng Chem 7:61-2 Ja '15*

**Drugs**  
Contributions of the chemist to the manufacture of pharmaceutical products. E. R. Eddred. *J Ind & Eng Chem 7:539-40 N '15*

*See also* Drug trade; also special drugs and groups of drugs, e.g. Anesthetics

**Analysis**

Studies in synthetic drug analysis. W. O. Emery and S. Polkin. *J Ind & Eng Chem 6:845-9, 751-3; 7:519-21 Aug '14, Je '15*

Studies in synthetic drug analysis; estimation of phenacetin and salol in admixture. W. O. Emery, C. C. Spencer and C. C. LeFebvre. *J Ind & Eng Chem 7:681-4 Ag '15*

**Drunkenness.** *See* Temperance

**Drury, F. E.**  
Residence of F. E. Drury, Esq., Cleveland, Ohio. L. T. Frary. *II plans Arch Rec 88:601-14 D '15*

**Dry blast process**

Blast-furnace plant auxiliaries and general arrangement; dry blast. J. B. Johnson, jr. *diag* Met & Chem Eng 13:429-39 J1 '15  
**Thermal principles of the blast furnace.** J. B. Johnson, jr. *Met & Chem Eng* 13:718-20, 787-92, 838-40, 905-10, 954-62 O 15-D 15 '15

**Dry cleaning. See Cleaning****Dry docks. See Docks****Dry goods**

*See also* Hosiery; Textile industry and fabrics

**Dry rot**

Dry rot in factory timbers. F. J. Hoxie. *Eng Rec* 71:336-7 Mr 13 '15  
 Prevention of dry rot in mill buildings. F. J. Hoxie. *Eng Rec* 71:400-1 Mr 27 '15  
 Protecting wooden buildings from dry rot. *Eng N* 73:498 Mr 11 '15

*See also* Wood preservation

**Drying**

Comparison of the relative drying powers of sulfuric acid, calcium chloride and aluminum trioxide when used in ordinary Schebler desiccating jars. J. W. Marden and V. Elliott. *J Ind & Eng Chem* 7:320-1 Ap '15  
 Drying properties of linseed oil treated with cobalt, lead and manganese oleostearates. L. E. Wise and R. A. Duncan. *J Ind & Eng Chem* 7:202-5 Mr '15  
 How producer gas is used for drying molds and cores and for heating index in English foundries. *Foundry* 43:229-30 Je '15  
 Using electricity to dry clothes of outside workers. *Eng W* 66:869 O 16 '15

*See also* Coal drying; Drying apparatus; Lumber drying

**Drying apparatus**

Automatic sand dryer. *Eng Rec* 71:4655 S 11 '15  
 Drying high-tension transformers with steam heat. *diag Eng W* 65:676 Mr 13 '15  
 Drying iron ore on the Mesabi range. M. J. Collins. *Eng & Min J* 99:696-7 Ap 17 '15  
 Drying large transformer units electrically. *Eng W* 65:736-7 Mr 20 '15  
 Drying sand in 7-yd. batches. *diag Eng Rec* 71:46193 J1 31 '15  
 Troughton dryer. *Eng Rec* 71:46193 J1 31 '15  
 Norfolk & Western humidity-controlled dry kiln for lumber. W. L. Lewis. *Eng Rec* 71:46193 J1 31 '15  
 Oil burning sand dryer. F. C. Lester. *diag Eng Rec* 71:46193 J1 31 '15  
 Quick-closing door for pressure cylinders. *diag Eng N* 73:1064-6 Ja 3 '15  
 Scientific clothes dryer. *Eng Rec* 71:46193 J1 31 '15

**Drying apparatus (for textile fabrics)**

Electric garment dryer conserves health and schedules. *Eng Rec* 71:46193 J1 31 '15  
 Science and the tariff: apparatus employed in determining customs duties. M. R. Pickrell. *Eng Rec* 71:46193 J1 31 '15  
 Scientific drying. *Textile World* 50:110-12 O '15  
 Scientific drying of textile materials. *Textile World* 49:528-9 Ag '15  
 Thermal efficiency of cloth drying. C. H. Perkins. *plan Textile World* 48:594-6 Mr '15

**Dual personality. See Personality****Dumdum bullets. See Bullets****Dump cars**

Comparative cost of handling earth on flat and air dump cars. *Eng Rec* 71:4444 Je 18 '15  
 Improved turntable for contractor's dump cars. *diag Eng N* 73:988 My 20 '15  
 Kangaroo refuse-elevating and dump car. *diag Eng N* 73:1040 My 27 '15  
 Two-way dump cars. *Eng Rec* 71:46193 J1 31 '15

**Dumping appliances**

Ash and refuse dumping board. West 77th st., North river, New York city. C. W. Staniford. *diag Eng N* 73:168-7 Ja 28 '15  
 Car dumper at Conneaut, Ohio. *Eng Rec* 71:46193 J1 31 '15  
 Car dumping machine with improved features at Conneaut Harbor, Ohio. *Eng Rec* 71:46193 J1 31 '15

Car dumping machines on the Hocking Valley Ry.'s coal dock, Toledo, Ohio. *Eng Rec* 71:46193 J1 31 '15  
 Rapid car dumping plant, Toledo, O. *Eng Rec* 71:46193 J1 31 '15  
 Refuse dumped from the cart to scow without scattering. *Eng Rec* 71:46193 J1 31 '15

*See also* Dump cars

**Duplex houses**

Two-family frame houses. *Eng Rec* 71:46193 J1 31 '15  
 Two-family house built of hollow tile. E. G. Zorn. *Eng Rec* 71:46193 J1 31 '15

**Duplex process. See Steel metallurgy****Durant, Oklahoma****Sewerage**

Electrolytic sewage treatment plant at Durant, Oklahoma. W. L. Benham. *Eng Rec* 71:46193 J1 31 '15

**Durax pavement. See Pavements, Granite****Dust**

Dust and bacteria content of city air. M. C. Whipple. *Eng Rec* 71:46193 J1 31 '15  
 Dust; what it is, what it does. W. Swaine. *Eng Rec* 71:46193 J1 31 '15  
 Studies in air cleanliness. C. C. Whipple and M. C. Whipple. *Eng Rec* 71:46193 J1 31 '15

*See also* Coal dust; Rock dust

**Dust collectors. See Dust removal****Dust prevention**

Dust prevention and street cleaning. W. H. Connell. *Good Roads* 11:9:103-6 Mr 6 '15  
 Dust suppression and street cleaning in Philadelphia. W. H. Connell. *Good Roads* 11:9:103-6 Mr 6 '15  
 Method of applying oil for dust prevention. *Eng & Contr* 43:455-6 My 12 '15  
 Methods of applying tar for dust prevention. *Eng & Contr* 43:455-6 My 12 '15  
 Progress reports of experiments in dust prevention and road preservation, 1914. U S Agric Bul 257:1-44 '15  
 Surface oiling of city streets. T. R. Agg. *Munice J* 38:653-4 My 13 '15

*See also* Floors, Concrete

**Dust removal**

British Portland cement making machinery. *diag Eng Rec* 71:46193 J1 31 '15  
 Cloth screen dust arrester. *Foundry* 43:331 Ag '15  
 Cyclone or centrifugal separator designs. *diag Metal Work* 84:56-1 J1 9 '15  
 Exhaust system in pattern shop. *Eng Rec* 71:46193 J1 31 '15  
 Factory exhaust systems. *Metal Work* 84:23-3 J1 2 '15  
 Flaming dust collecting system. W. C. Hannan. *Eng Rec* 71:46193 J1 31 '15  
 How state laws compel removal of dust. L. C. Epton. *Eng Rec* 71:46193 J1 31 '15  
 Investigations on the nature and elimination of odors and dust from a garbage reduction plant. H. W. Mahr and A. C. Kraft. *diag Eng Rec* 71:46193 J1 31 '15  
 Pattern for spiral strips in dust separator. *diag Metal Work* 84:369-70, 545-6 S 17, O 29 '15

Solution of smoke, fume and dust problems by electrical precipitation. L. Bradley. *Met & Chem Eng* 13:911-14 D 1 '15

Suggestions for installing and testing factory exhaust systems. *Eng Rec* 71:46193 J1 31 '15

*See also* Air washers; Electric precipitation; Waste removal

**Dwight-Lloyd process**

Mechanical progress of sintering. B. G. Klugh. *diag Eng Rec* 71:46193 J1 31 '15  
 Iron Age 98:1000-4 O 28 '15  
 Discussion. R. M. Brooke. *Eng Rec* 71:46193 J1 31 '15  
 Salida smelter. F. D. Weeks. *Am Inst Min E Bul* 104:1691-5 Ag '15  
 Dwight-Lloyd sintering practice at Salida, Colo. *Eng & Min J* 100:312 Ag 21 '15

**Dye houses**

Concrete tanks for dye-houses, L. C. Wason; W. M. Kinney, Concrete Cem 6:169 Mr '15  
Concrete tanks for dye houses, R. L. Newmann, Concrete Cem 7:32 JI '15

**Dye industry**

Alternatives in case of a dyestuff famine, Sci Am 8 80:192 S 18 '15  
American dye making, Textile World 49:275-6 My '15  
Aniline dye situation, I. F. Stone, Met & Chem Eng 13:663-71 O 1 '15; Excerpts, Textile World 50:67-9 O '15  
Artificial organic dyes, Sci Am 8 80:141 Ag 28 '15  
British dye scheme criticised, Textile World 49:276-7 My '15  
British national dye scheme, D. G. Anderson, J Ind & Eng Chem 7:538-41 Je '15  
Contributions of the chemist to the industrial development of the United States: a record of achievement, R. C. Hesse, J Ind & Eng Chem 7:297-301 Ap '15; Same, Sci Am 8 79:234-6 Ap 10 '15; Abstract, Met & Chem Eng 13:287-8 My '15  
Developer situation, Textile World 48:522-3 F '15  
Development of the dye industry, M. L. Crossley, Sci Am 112:577-1 Je 5 '15  
Development of the use of natural dyestuffs, R. S. Chapin, Textile World 49:338-9 S '15  
Dyestuff famine, T. H. Norton, II Sci Am 113:400-1, 427-1 N 6-13 '15  
Dyestuff industry, Sci Am 8 79:336 My 22 '15  
Dyestuff problem in England, Textile World 48:334-6, 383-5 D 14-Ja '15  
Dyestuff situation, Textile World 48:557-9; 49:61-3 Mr-Apr '15  
Dyestuff situation and its lesson, A. D. Little, J Ind & Eng Chem 7:237-9 Mr '15; Same, Sci Am 8 79:278-9 My 1 '15  
Dyestuff situation in the United States, T. H. Norton, Textile World 49:307-10 Je '15  
Dyestuff situation—much smoke but no fire, Am Gas Light J 103:297 N 8 '15  
Dyestuff situation—papers and discussion before the New York section of Society of chemical industry, Met & Chem Eng 13:779-82 N 1 '15  
Dyestuffs and the Department of commerce, Textile World 50:147-9 N '15  
Dyestuffs for American textile and other industries, T. H. Norton, map II 8 Bur For & Dom Com 96:1-57 '15  
Emergency meeting of hosiery manufacturers, Textile World 50:63-5 O '15  
Facts about the color shortage, Inland Pr 56:59 O '15  
Foreign markets for American chemicals, T. H. Norton, Met & Chem Eng 13:760-2 O 15 '15  
German investments in the dyestuff industry, Sci Am 8 80:101 Ag 14 '15  
Government-owned dyestuff works in Great Britain, Textile World 48:271-3 Ja '15  
Hearing on the Patke patent bill, Textile World 48:468-75 F '15  
High explosives vs. dyestuffs, Textile World 48:528-9 F '15  
Intermediate products for the dye industry, Am Gas Light J 102:139 Mr 1 '15  
International chemical industry, Engineer 119:681-2 Je 25 '15  
Let us forget! Who killed Cock Robin? The U. S. tariff-history of coal-tar dyes, R. C. Hesse, J Ind & Eng Chem 7:694-709 Ag '15; Excerpts, Textile World 49:593-6 M '15  
Mobilization of American dye makers, Sci Am 113:392 N 6 '15  
Preparing for a famine in dyestuffs, Textile World 49:402-4 JI '15  
Present dyestuff situation, R. C. Killpaten, Textile World 49:185-90 My '15  
Printers' colors and war munitions, Inland Pr 56:337-9 D '15  
Proposed British dyestuff industry: a German opinion on Great Britain's prospects, O. N. Witt, Met & Chem Eng 13:248-9 Ap '15  
Protection in England, Textile World 48:465-6 F '15  
Relation of the dyer to the manufacturer, F. L. Lotte, Textile World 50:195-6 N '15  
Report of committee of the National association of cotton manufacturers on dyestuffs, Textile World 49:211-13 My '15

Secretary Redfield's preliminary report on the artificial dyestuff industry, Textile World 48:571-3 Mr '15

Selected quotations bearing on dye shortage from daily papers Aug. 15, 1914 to Feb. 20, 1915, J Ind & Eng Chem 7:302-4 Ap '15  
Synthetic dyestuffs and our explosives, T. J. Parker, J Ind & Eng Chem 7:272-3 Ap '15  
Two problems of the coal tar dye industry, R. C. Hesse, Textile World 49:225-8 My '15  
Who killed Cock Robin? notes on the tariff history of coal-tar dyes, Sci Am 8 80:135 Ag 28 '15

See also Coal tar colors

**Dye testing**

Paint and dye testing: use of the white flame arc as a standard, W. R. Mott, Sci Am 8 80:350-2 N 27 '15

**Dyeing machines**

Circulating dyeing machine, dlags Textile World 49:120-1 Ap '15  
Circulating liquor in dyeing machines, dlag Textile World 50:113-15 O '15  
Dyeing process, dlags Textile World 49:364-5 Je '15  
Giles yarn dyeing machine, dlags Textile World 48:332-4 D 15 '14  
Hurricane rotary-circulating machine for bleaching and dyeing, II Textile World 49:560 Ag '15  
Improved dyeing machine, dlags Textile World 48:622 Mr '15  
Improved tension device for the Giles dyeing machine, II Textile World 49:560-1 Ag '15  
Klunder-Weldon skein dyeing machine, II Textile World 48:435-8 Ja '15

**Dyes and dyeing**

Available dyestuffs, Textile World 50:231-4 N '15  
Color blending and shade matching, J. Brown, dlags Textile World 48:527-8 F '15  
Coloring principle of myrian rubin its azo-, sulfide and nitro-dyestuffs, S. Matow, J Ind & Eng Chem 7:113-16 F '15  
Colors for tropical countries, Textile World 48:601 Mr '15  
Dye receipt, See monthly numbers of Textile world, beginning December, 1914  
Dyeing hair cloth, II Textile World 49:348-9 Je '15  
Dyeing hosiery, Textile World 50:98 S O '15  
Dyestuffs for American textile and other industries, T. H. Norton, map II 8 Bur For & Dom Com 96:1-57 '15  
Lacwood dyes, Textile World 49:548-9 Ag '15  
Manufacture of Turkey-red oils from fatty acids, W. J. Schupp, J Ind & Eng Chem 7:406 S 15  
Modern mordant dyeing, Textile World 48:618-20 Mr '15  
Natural dyes as substitutes for coal tar colors, Textile World 48:236-8, 336-336a, 428-9 N 14-Ja '15  
New process of vat dyeing, Textile World 50:116-17 O '15  
Notes on dyeing oxidation aniline black, Textile World 50:226-8 N '15  
Revival of the use of natural dyestuffs, R. S. Chapin, J Ind & Eng Chem 7:673-8 JI '15; Same cond, Textile World 49:219-23 My '15  
Staining of cotton and wool mixed goods, Textile World 48:524-6 F '15  
Temperature coefficients and the effects of acids, bases and salts in reaction velocities of the triphenylmethane dyes, H. C. Middle and C. W. Porter, Am Chem Soc J 7:1571-89 Je '15  
See also Bleaching; Coal tar colors; Dyeing; Dye industry; Dyeing machines; Logwood

**Cost**

Labor cost of dyeing cotton yarns, L. J. Matow, Textile World 48:625-6 Mr '15

**Cotton**

Aftertreatment of cotton goods, L. J. Matow, II Textile World 49:468-60 JI '15  
Aniline black on cotton hosiery, R. C. T. Bick, Textile World 48:523-4 F '15  
Dyeing of military khaki, Textile World 48:424-6 Ja '15

**Dyes and dyeing—Cotton—***(Continued)*  
 Dyeing with vegetable and mineral dyestuffs. Textile World 49:549-51 Ag '15  
 Silicate of soda in dyeing cotton. A. Bolls. Textile World 49:117-19 Ap '15

#### Silk

Dyeing artificial silks. E. C. T. Bick. Textile World 49:119-20 Ap '15

#### Wool

Blacks on medium weight wool goods. Textile World 48:330-2 D '14

Dyeing and finishing wool fabrics. F. Sudler. diag Textile World 49:365-8 Je '15

**Dyestuffs.** See Dye industry; Dyes and dyeing

#### Dynamics

Apparatus for demonstrating Newton's laws. H. W. Harmon. diag Sci Am S 79:42-3 Ja 16 '15

See also Force and energy; Hydrodynamics; Thermodynamics

#### Dynamite

Dynamite does not shoot down. Colliery 35: 546-7 My '15

Dynamite safely removed from missed holes with air. Eng Rec 73:303-4 S 4 '15

Explosives used in war and metal mining. P. M. Barbour. Eng & Min J 100:508-11 S 25 '15

**Dynamo-electric machines.** See Dynamom; Electric motors

#### Dynamometer cars

Dynamometer car development. Ity R 56:768-9 Je 5 '15

Dynamometer car for the Japanese government railways. M. C. Schmidt. II plans Ity R 56:182-6 F 6 '15; Same. Ity Ago (Mech ed) 89:65-70 F '15

Dynamometer cars for the Southern railway. II diag plan Ity R 56:583-8 My 1 '15

#### Dynamometers

Junkers dynamometer. II diag Power 42:447-8 S 28 '15

#### Dynamos

Air cleaning apparatus for the ventilation of generators and transformers. W. Baum. II diag Gen Elec R 18:801-12 Ag '15

Air filters for turbo-generators. II diag Engineer 119:36-7, 81-3 Ja 8, 22 '15

Air-gap flux distribution in dynamo-electric generators. A. Still. diag J Fr Inst 179:21-46 Ja '15

Analysis of unbalanced three-phase systems. L. G. Stokvis. Elec W 65:1111-15 My 1 '15

Calculation of sudden short circuit phenomena of alternators. N. S. Mamant. diag 6 Jls Am Inst E M Pro 34:2043-79 S '15

Census of generating equipment. Elec W 65: 201-2 Ja 30 '15

Characteristics of the three-wire generator: analysis of its behavior when used as a balancer in a direct-current lighting system. O. J. Ferguson. diag Elec W 64:1199-1204 D 19 '14

Classification of electromagnetic machinery. F. Greedy. diag Am Inst E M Pro 34:1399-1423 J1 '15; Abstract. Elec W 66:62 J1 10 '15

Currents induced in the shafts of dynamo-electric machines; abstract. P. Circuit. Elec W 66:250 J1 31 '15

Delta-cross connections of transformers for parallel operation of two- and three-phase systems. (I.) P. Roux. diag Am Inst E M Pro 34:1683-94 Ag '15

Designing small dynamos and motors. (I.) R. Krauss, Jr. diag Sci Am S 80:304-6 D 4 '15

Developments in electrical apparatus during 1914. J. Liston. II Gen Elec R 18:80-3 F '15

Diesel engines for generator drive. C. Legendrand. Am Inst E M Pro 34:1815-18 Ag '15

Direct-connected exciters. II Elec R & W Elec'n 67:342 Ag 21 '15

Dynamos: inventions. H. Weston. J Ind & Eng Chem 7:250-1 Mr '15

Effect of field-coil reversals. M. C. Farham. Elec W 66:643 S 18 '15

Electric generators. (I.) M. Tieldt. II diag Horseless Age 35:544-8, 578-81 Ap 21-28 '15

Gear-driven continuous current turbo-generator. II Engineer 119:608 Je 18 '15

Heating of generator bearings. Elec R & W Elec'n 66:78-9 Ja 9 '15

How the compounding effect of interpole generator showed up in parallel operation. E. C. Farham. Elec W 66:1206 N 27 '15

Improved ventilation of generator permitted a 28 per cent greater load. diag Elec W 66:976 O 30 '15

Incremental armature copper losses at no-load and armature teeth eddy-current losses. A. Press. diag Inst E E J 53:820-3 Je 15 '15

Inherent regulation of synchronous alternating-current generators. A. Still. diag Inst E E J 53:587-97 Ap 15 '15

Large-sized generator for gas-steam set. II Elec W 65:819-20 Mr 27 '15

Laws of induction; abstract. A. E. Clayton. diag Elec W 66:652 S 18 '15

Low-voltage direct-current generators. G. Fox. diag Power 40:804-5 D 8 '14

Mechanical effects of electrical short-circuits. S. H. Weaver. Gen Elec R 18:1066-74 N '15

Mechanical forces in circuits carrying heavy currents; abstract. P. V. Hunter. Elec W 64: 1259 D 26 '14

Parallel operation of alternating current generators driven by internal combustion engines; factors affecting generator design. R. M. Doherty. Gen Elec R 18:167-73 Mr '15

Parallel operation of frequency changers. (I.) H. Rettow. diag Gen Elec R 18:836-8 Ag '15

Radio generator for amateurs. F. E. Ward. II Sci Am S 80:336 J1 17 '15

Space distribution of flux density. A. Still. Elec W 65:1679-82 Je 26 '15

Spray-type air washers and coolers for New York station. II diag Elec W 65:349-50 F 6 '15

Starting an old dynamo. G. E. Miles. Power 41:688-9 My 18 '15

Supplying air to generators at constant temperature and humidity. II diag Elec W 66:92 J1 10 '15

Swiss turbo-generator sets. II Engineer 119: 304-8 F 26 '15

Test for dirt in an air supply. S. A. Moss. II Gen Elec R 18:622-5 J1 '15

Testing the air supplied to turbo-generators. Engineer 120:139-40 Ag 6 '15

Transient phenomena in coils with capacity between turns; abstract. K. W. Wagner. Elec W 65:858-9 Ap 3 '15

Triple-frequency currents in delta-connected generator. diag Elec W 65:1240 My 15 '15

Unequal air gap. P. Justus. diag Power 41: 619 My 4 '15

Ventilating requirements of vertical water-wheel generators. Elec W 66:301 Ag 7 '15

See also Armatures; Commutators; Electric motors; Switchboards

#### Testing

Efficiency test on a large alternator. J. H. McDougall. Power 41:86-7 Ja 19 '15

## E

#### Earth

Earth considered as a heat engine. G. F. Becker. Sci Am S 79:391 Je 19 '15

Electric waves and oscillations; means of investigating the interior of the earth. G. Lombach. Sci Am S 79:154-5 Mr 6 '15

Tides in the earth's crust and the elasticity of the globe. A. Berget. Sci Am S 79:382-3 Je 12 '15

See also Earthquakes; Geological time; Geology

#### Rotation

Watching the earth revolve: an apparatus that enables the movements of the earth to be directly studied. A. H. Compton. II Sci Am S 79:196-7 Mr 27 '15

#### Earth, Age of

Age of the earth; a defense of Lord Kelvin's theory. F. A. Lindemann. Sci Am S 80:183 S 18 '15

Birth-time of the world: methods of determining its age. J. Joly. Sci Am S 79:77-9 Ja 30 '15

Sea-salt and geologic time. H. S. Shelton. Sci Am S 79:79-80 Ja 30 '15

**Earth, Duration of**

Modern ideas on the end of the world. G. Jau-mann. *Sci Am S* 79:178-9 Mr 20 '15

**Earth, Figure of**

Deformation of the earth by the moon. O. Klotz. *Sci Am S* 79:167 Mr 13 '15  
Isostasy and mountain building. L. de Marchi. *Sci Am S* 80:198-9 S 25 '15

**Earth pressure**

Arched reinforced-concrete conduits designed by the theory of least work. W. M. Smith. *Eng Rec* 71:648-52 My 23 '15; Discussion. 71: 753 Jo 12 '15

Boston foundations. J. L. Worcester. *Boston Soc C R J* 1:10-13 Ja '14

Data requested on the bearing value of soils. *Eng & Contr* 43:175 My 26 '15

Distribution of vertical soil pressures; tests at Engineering experiment station of Penn-sylvania state college. J. A. Moyer. *Eng Rec* 71:330-2 Mr 15 '15

Earth pressures determined by laboratory ap-paratus. J. H. Smith. *diag Eng Rec* 72:72 Ji 17 '15

Internal pressure and resistance of clay, and the supporting power of clay foundations. A. L. Bell. *Engineer* 119:124 Ja 29 '15

Plodding destroys a tunnel by clay pressure. *Eng Rec* 74:404-5 Ag 26 '15

Soil tests reported and safe underpinning methods in sand described. J. E. Greenhead. *diag Eng Rec* 72:651-3 N 20 '15

**Earth slides. See Earthwork—Slides****Earth temperature**

Ground temperature variations decrease with depth. R. Lauchill. *Eng N* 74:510-11 S 9 '15

**Earthquakes**

Earth tremors on the Rand. A. C. Key. *Eng & Min J* 100:833-4 N 20 '15

Earthquake dangers in the United States. *Sci Am* 113:266 S 25 '15

Prevision of earthquakes. G. Davison. *Sci Am S* 80:398-9 Ag 11 '15

Sakurajima eruptions and earthquakes. R. Omori. *Sci Am S* 79:242-3 Ap 17 '15

*See also Italy* Earthquake, 1915

**Bibliography**

Earthquake literature. *Sci Am* 113:318 O 9 '15

**Earthquakes and building**

Earthquake-proof concrete tower. San Fran-cisco. *Eng N* 74:308-9 Ag 12 '15

Earthquake-proof tower. C. Berleth, Jr. *Eng M* 49:327 S '15

Imperial valley earthquake tests engineering works. *Eng N* 74:234 Ji 29 '15

Irrigation system uninjured by Imperial val-ley quake; brick buildings suffer most. *Eng Rec* 72:27-8 Ji 3 '15

Protection from earthquakes. T. Moreux. *Sci Am S* 79:90-1 F 6 '15

**Earths**

Kambura earth and its bleaching action on oils. S. Ileno. *diag J Ind & Eng Chem* 7: 595-600 Ji '15

**Earths, Rare**

Chemical research on terbium. C. James and D. W. Bissel. *Am Chem Soc J* 36:2080-6 O '14

Electrolysis of solutions of the rare earths. L. M. Dennis and R. J. Lomon. *Am Chem Soc J* 37:181-7 Ja '15

Electrolysis of solutions of the rare earths. L. M. Dennis and J. A. Van der Meulen. *Am Chem Soc J* 37:1963-76 S '15

Fractional crystallization of the fluorates of the rare earths of the dysprosium group. L. M. Dennis and R. H. Rhodes. *Am Chem Soc J* 37:807-15 Ap '15

*See also Thorax*

**Earthwork**

Slotted pipe aids placing of hydraulic fill. A. M. Thompson. *Eng Rec* 71:534 Ap 24 '15

*See also* Dams; Dredging; Earth pressure; Embankments; Excavation; Filling; Forti-fication; Foundations; Grading; Hydraulic excavation; Railroads—Earthwork; Tunnels and tunneling

**Cost**

Comparative cost of handling earth on flat and sloping areas. *Trs Asa* 82:1444 Ja 12 '15

Methods and costs of moving earth in southern road construction. N. C. Hughes, jr. *Eng N* 73:734-5 Ap 15 '15

**Slides**

Stopping a difficult slide by the use of explo-sives. *Eng N* 74:24 Ji 1 '15

*See also* Panama canal Slides

**Tables, calculations, etc.**

Method of obtaining volumes in railroad or ditch work by diagrams. F. C. Snow. *Eng & Contr* 43:304 Mr 31 '15

Preliminary estimating of grading simplified. J. M. Brown. *Eng Rec* 71:610-11 My 15 '15

Simple form for earthwork computations. E. F. Verplanck. *Eng N* 73:29-30 Ja 7 '15

Table for computing the area of sidehill cuts. *Eng N* 71:272 Ag 5 '15

**East river, New York**

Plan for the improvement of Hell Gate, East river. C. D. Ward. *map Sci Am* 112:432 My 8 '15

**East St. Louis, Illinois**

Playground for a small city; Jones park. W. Webb. *Eng N* 74:421-6 D 14 '14

**Eastern supply association**

Meeting. New York city, Feb. 17; list of those in attendance. *Bom Eng* 70:282-3 F 27 '15

Summer meeting. Atlantic City. N. J., June 16. *Bom Eng* 71:377-9 Jo 26 '15

**Eastland (steamship)**

Capitizing of the Eastland. *Eng N* 74:225-7 Ji 29 '15

Eastland disaster and vessel stability. R. A. Fowler. *Eng N* 71:516-17 S 9 '15

Engineer's report blames Eastland disaster on poor design, overloading and mishandled bal-last. *Eng Rec* 72:221 2 Ag 21 '15

**Ecclesiastical architecture. See Church architecture****Economic conditions**

Political economy and the engineer. G. L. Hoax. *Elec W* 66:1639-51 Jo 12 '15

**Economics**

*See also* Banks and banking; Credit; Gov-ernment ownership; Labor and laboring classes; Monopolies; Profit sharing; Tariff; Trusts; Industrial; Unemployed

**Economizers. See Fuel economizers****Eddy currents**

Incremental armature copper losses at no-load and armature teeth eddy-current losses. A. Press. *diag Ind E* 13:153-20 S Jo 15 '15

**Eddy rings**

Eddy rings in firetube boilers. *Am Soc M E J* 37:117 F '15

**Edison, Thomas Alva, 1816-**

Award of the Franklin medal. *J Fr Inst* 180: 111-14 Ji '15

Celebration of Edison day at Panama-Pacific International exposition and at laboratories in West Orange. N. J. *Elec W* 66:957-8 O 30 '15

Edison and the invention of the electric in-candescent lamp. *El Elec R & W Elec'n* 67: 878-8 O 9 '15; Same abstr. *Foundry* 43:404 O '15

Sketch. *Eng M* 50:109 N '15

**Edison illuminating companies, Association of.**

*See* Association of Edison illuminating com-panies

**Edison phonograph shop, New York city**

Edison phonograph shop; heating and ven-tilation at minimum cost, with ventilation of soundproof booths. C. M. Daniel. *plans Heat & Ven* 13:13-18 Ap '15

**Edison plant, West Orange, New Jersey**

Comments on the Edison fire. *Eng N* 73:38-40 Ja 7 '15

Concrete construction and the Edison fire. L. C. Wason. *Textile World* 48:637-40 F '15

Concrete was melted in Edison fire. *Eng N* 73:382-3 F 18 '15

Dismatrous fire at Edison factory. *Eng Rec* 70:680-2 D 18 '14

Fire damages the Edison plant. *El Elec W* 64: 1132-3 D 12 '14

Fire in the Edison works at West Orange. N. J. *El Elec W* 72:1922-7 D 17 '14

- Edison plant, West Orange, New Jersey—Cont.**  
 Hot chemicals and concrete formed slag at Edison fire. Eng Rec 71:184 F 6 '15  
 Preliminary repair work on the Edison concrete buildings. II diagrs Eng N 73:89-91 Ja 14 '15  
 Preliminary report of committee on Edison fire. diagrs plan Eng & Contr 43:193-6 Mr 3 '15  
 Preliminary report of committee on Edison fire; findings. Eng & Contr 43:146 F 17 '15; Same. Concrete Cem 6:120-1 Mr '15  
 Rebuilding Edison's great plant. Sci Am 112: 50 Ja 9 '15  
 Repair of concrete buildings at Edison plant sets precedents in construction work. II diagrs Eng Rec 71:503-6 Ap 17 '15  
 Underwriters and fire protection association report on Edison fire. II diag plan Eng Rec 71:239-42 F 20 '15
- Edmonton, Alberta**
- Sewerage**  
 Construction plant and methods employed in building a system of concrete block tunnel sewers at Edmonton, Alberta. diagrs long & Contr 43:381-3 Ap 21 '15  
 Design features of new sewerage works at Edmonton. diagrs Eng & Contr 43:400-1 My 5 '15
- Education**  
 Address to graduating class, Franklin Institute school of mechanic arts. G: A. Hoadley. J Fr Inst 179:587-95 My '15  
 Educational scrap heap and the blind alley job. L. W. Dooley. Sci Am S 79:170-1 Mr 13 '15; Excerpts. II Sci Am 112:247 Mr 13 '15  
*See also* Evening and continuation schools; Industrial education; Professional education; Scholarships; Trade schools; Vocational education
- Germany**  
 War and the school; how the interest of German school children is stimulated. II Sci Am S 80:180 N 18 '15
- India**  
 British India. U S Sp Cons Rep 72:40-6 '15
- Educator, Compulsory.** See Compulsory education
- Education, Industrial.** See Industrial education
- Education, Professional.** See Professional education
- Education of children**  
 Cure of exceptionally bright children. M. P. J. Grossmann. Sci Am S 80:171 N 11 '15
- Edwards, Edward**  
 Edward Edwards and his art. S. H. Morgan. II Inland Ptr 55:516-17 J1 '15
- Efficiency**  
 Efficiency and standardization. C. B. Auel. Am Ind 16:31-3 N '15  
 Efficiency system for road contractors. J: H. Hammond. Eng & Contr 43:552-4 Jo 23 '15  
 Personal efficiency. B. L. Winchell. Ry Ago 58:191 Ja 29 '15  
*See also* Ability tests; Office management; Scientific management
- Efficiency, Industrial**  
 Business efficiency and the human element. M. Chapman. Metal Work 81:71-2 J1 16 '15  
 Drink and work. J. D. Hackett. Iron Age 95: 255 Ja 28 '15  
 Efficiency—applied common sense and experience. F. C. Schwedman. Am Ind 15:16-17 F '15  
 Efficiency in the brass foundry. W. R. Donn. Metal Ind n 12:327-9 Ag '15  
 Efficiency in the plating room. H. P. Later. II Foundry 43:360-5 N '15  
 Efficiency in the stores department. W. G. Astle. II Elec Ity J 46:908-10 O 30 '15  
 General business efficiency in connection with cotton mill management. J. T. Rose. Textile World 49:190-3 My '15  
 How to create industrial leaders; chapter from "Industrial leadership." II: L. Gantt. Eng M 50:428-37 D '15  
 Increased efficiency. A. A. Dowd. Sibley J 29: 157-63 F '15  
 Industrial leadership. H. L. Gantt. Iron Ago 95:196-7 Ja 21 '15
- Measurement of efficiency.** H. L. Gantt. Iron Tr R 55:1131-3 D 17 '14; Same. Ind Eng 14:463-5 D '14; Same. Iron Age 94:1320-1 D 3 '14; Same. Automobile 31:1104-5 D 17 '14; Same cond. Ry Ago (Mech ed) 89:249-51 My '15; Same cond. Metal Work 83:725-6 My 21 '15; Abstract. Eng M 48:577-80 Ja '15; Abstract; with discussion. Am Soc M E J 37: 11-13 Ja '15  
 More about the human factor. D: M. Myers. Eng M 49:801-8 S '15  
 Retalling steel mill products. II Iron Tr R 56: 65-71 Ja 7 '15  
 Shop efficiency. G: H. Logan. Ry R 57:464-7 O 9 '15  
 System and its abuse. J: Calder. Iron Age 96: 1043-4 N 4 '15  
 Systems for the engineer and contractor. T: Burwick. Heat & Ven 11:37-34 N; 15-21 D '14; 12:18-23 Ja '15  
 Using the electric-power meter to measure wasted production. R. El. Loper. Eng M 49: 231-4 My '15  
 Waste in the management of public utility power plants. F. W. Collins. Eng M 49:388-93 S '15  
 What is efficiency? R: M. Van Gaasbeek. Am Ind 16:32-3 O '15  
 Where the money goes. R: O. Wye. Elec R & W Elec'n 65:1210-11 D 26 '14  
*See also* Factory management; Foundry management; Office management; Scientific management; Shop management; Time study
- Efflorescence**  
 Cause and prevention of efflorescence. Concrete Cem 7:116-17 S '15
- Eggs**  
 Bacteriological and chemical study of commercial eggs in the producing districts of the central West. 8 pls U S Agric Bul 51: 1-77 '14
- Eggs, Dried**  
 Egg and albumen industry in China. Am Ind 15:40 F '14
- Egrets**  
 British India. U S Sp Cons Rep 72:428-9 '15
- Egypt**
- Antiquities**  
 Treasure of Iahun; beautiful jewelry ornaments and tools found in a plundered pyramid. W. M. F. Petrie. II Sci Am S 79:284-5 Ap 24 '15
- Ehrlich, Paul, 1854-1915**  
 Discoveries in chemotherapy. Sci Am 113:210 S 4 '15
- Eight-hour day.** See Hours of labor
- Ejectors**  
 Squirt hose ejector. diagrs Ry Ago (Mech ed) 89:256 My '15
- Ejectors, Sewage.** See Sewage ejectors
- Elastic deformation.** See Deformations (mechanical)
- Elastic fabrics**  
 Manufacture of elastic fabrics. S: Brown. II Textile World 46:408-8, 491-4; 47:283-4, 324-6, 502-3; 48:394-7 Ju-Jl, My-Je, S '14, Ja '15
- Elasticity**  
 Bending elasticity of cast iron. A. Ono. Am Soc M 10 J 37:290-1 My '15  
*See also* Strains and stresses; Strength of materials
- Elbows, Pipe.** See Pipe elbows
- Electric accidents.** See Electric shock
- Electric alarms**  
 Electric alarm for bevel gear generator. H. K. Morgan. diag Mach 22:232 N '15  
 Garage alarm. diagrs Elec R & W Elec'n 66: 387-8 F 27 '15  
 Motor-driven fire and general alarm siren. II Elec R & W Elec'n 66:40 Ja 2 '15  
*See also* Fire alarms
- Electric apparatus, Protective.** See Electric protective apparatus
- Electric apparatus and appliances**  
 Automatic device for timing relay and fuse operation. plan Elec W 65:608-9 Mr 6 '15



**Electric apparatus and appliances—Continued**

Automatic electric elevator dispatcher. N. G. Meade. *diag* Power 41:540-1 Ap 20 '15  
Carbon as a heating element in appliances. C. W. Piper. *Elec W* 66:134-5 J1 17 '15  
Castings as electrical apparatus parts. A. B. Heynders. *Iron Age* 94:1496-7 D 31 '14; Abstract (Holding an electrical manufacturer's business). *Foundry* 43:96-7 Mr '15  
Convenient electric soldering iron. J. N. Graham. *diag Elec* 11y J 46:66 J1 10 '15  
Current supply for motion picture machines. H. R. Johnson. *diag Gen Elec* R 18:895-904 S '15  
Developments in electrical apparatus during 1914. J. Liston. *diag Gen Elec* R 18:80-93 F '15  
Electric bread-pan cleaning and greasing machine. *diag Elec* R & W *Elec'n* 66:1149 D 12 '14  
Electric equipment for painting without a brush. *diag Elec W* 66:1050 N 6 '15  
Electric remote gauges for shooting ranges. *Sci Am* 112:633-4 Ja 26 '15  
Electric well-sounding instrument. L. W. Stocker. *diag Eng N* 73:444-6 Mr 4 '15  
Electrical appliances for workshops. *diag Engineer* 119:474-6, 546-9, 570-2, 620-2; 120:40-1, 54-6 My 14, Je 4-11, 25, J1 9-16 '15  
Electrical ball pitchers for indoor batting practice. *diag Sci Am* 113:364 O 23 '15  
Electrical long distance transmitting, indicating and recording system. *diag Ind Eng* 14:395-6 O '14; *Colliery* 35:281-2 D '14; *Elect & Von* 11:57-9 D '14; *Mach* 21:330-1 D '14; *Met & Chem Eng* 13:797-8 D '14; *Eng N* 72:1136-7 D 3 '14; *Elec R* & W *Elec'n* 66:1100-1 D 5 '14; *Power* 40:316-17 D 29 '14  
Electrical sounding. *diag R. Gilson. diag Elec R & W Elec'n* 66:1002-3 My 29 '15; Abstract. *Eng M* 49:764 Ag '15  
Electrically heated embossing block. *diag Elec W* 66:995 O 30 '15  
Electrically operated chime outfit. *diag Elec R & W Elec'n* 66:701-2 Ap 10 '15  
Estimated values of materials for use in electrical industry. *Elec R & W Elec'n* 66:11 Ja 2 '15  
Measuring well-water levels under difficulties. H. W. Keith. *diag Eng N* 74:1037 N 25 '15  
N. G. L. A. committee report on electrical apparatus. *Elec W* 65:1517 Je 12 '15  
Ozone apparatus as a business proposition. *Elec R & W Elec'n* 66:33-4 Ja 2 '15  
Past year in electricity. *diag Iron Age* 95:294-5 F 4 '15  
Peerless variable-speed portable electric power equipment. *diag Elec R & W Elec'n* 66:314 F 13 '15  
Photoelectric relay. J. Kuns. *diag Elec W* 66:934 O 23 '15  
Selling lamp-socket appliances; an analysis of eleven years' experience in marketing electric household devices in southern California. S. M. Kennedy. *diag Elec W* 65:1412-14 My 20 '15  
Smoke recorder and monitor. W. W. Strong. *diag Power* 40:912-13 D 20 '14  
Swiveling attachment plug. *diag Elec R & W Elec'n* 67:980 N 27 '15  
Voting by electrical apparatus. *diag Elec R & W Elec'n* 66:744-5 Ap 17 '15  
Western electric developments in 1914. *Elec R & W Elec'n* 66:46-7 Ja 2 '15  
Westinghouse electric developments in the year 1914. *Elec R & W Elec'n* 66:43-5 Ja 2 '15  
Weston portable electrical testing instruments. *diag Textile World* 50:126-8 O '15  
*See also* Armatures; Audion; Automobiles—Electric equipment; Condensers (electricity); Dynamos; Electric batteries; Electric bells; Electric circuit breakers; Electric controllers; Electric current rectifiers; Electric equipment; Electric furnaces; Electric fuses; Electric instruments; Electric lamps; Electric machinery; Electric motors; Electric motors; Electric precipitation; Electric protective apparatus; Electric railroads—Equipment and supplies; Electric shops; Electric shovels; Electric signals; Electric standards; Electric sterilization; Electric toys; Electric transformers; Electricity in mining; Electricity in the home; Electricity on the farm; Electromagnets; Fans, Elec-

tric; Fessenden oscillator; Fire alarms; Galvanometers; Gas and oil engines—Ignition; Induction coils; Oscillators; Phase advancers; Relays; Rheostats; Switchboards; Synchroscopes; Telephone

**Exhibitions**

Electrical exposition and motor show of 1915. *Sci Am* 113:339 J. O 16 '15  
General electric company's exhibit at the Panama-Pacific international exposition. *diag Elec R & W Elec'n* 66:132-3 Ja 16 '14  
General electric company's exhibits at the Panama-Pacific international exposition. G. W. Hall. *diag Gen Elec* R 18:561-71 Je '15  
Homa electrical at San Francisco. *diag Elec W* 66:1126-6 My 1 '15  
"Home electrical" at the Panama-Pacific international exposition. I. C. Shafer. *diag Gen Elec* R 18:572-8 Je '15; Same cond. *Elec R & W Elec'n* 66:1041-3 Ja 5 '15

**Losses**

Core loss in series motor. T. M. Robie. *diag Power* 41:771-2 Je 8 '15

**Electric arc**

Arc phenomena. A. G. Collins. *diag Am Inst E E Pro* 34:2081-2100 S '15  
Electric arc in vapors and gases at reduced pressures. W. A. Barrah. *diag Met & Chem Eng* 13:915-18 D 1 '15  
Ferro-limeite arc on alternating-current circuits. I. Ladoff. *diag Elec R & W Elec'n* 66:871-2 My 8 '15  
Liquefaction of carbon and the temperature and conditions of the electric arc. *Sci Am S* 80:319 N 13 '15  
Unstable states in arc and glow. W. G. Cady. *Met & Chem Eng* 13:866-9 N 15 '15; Abstract. *Elec W* 66:1166-7 N 20 '15  
*See also* Electric lamps; Arc

**Electric armatures. See Armatures****Electric batteries**

Battery zincs; some causes of defective service; abstract. R. Job and P. F. White. *diag Age* 59:61 J1 9 '15  
Buffer batteries for alternating-current systems; abstract. L. Schroeder. *Elec W* 65:788 Mr 27 '15  
Constructing selenium cells. *Sci Am* 112:201 F 27 '15  
Construction of selenium cells. S. Wehn. *Sci Am* 113:103 My 1 '15  
Depolarization in Le Clanche cells; abstract. M. D. Thompson and E. C. Crocker. *Met & Chem Eng* 13:319 My '15; Abstract, with discussion. *Elec R & W Elec'n* 66:821-2 My 1 '15  
Galvanic cell that reverses its polarity when illuminated. A. A. Campbell. *Sci Am S* 80:66 J1 31 '15  
New form of primary battery. E. Bollini. *diag Elec R & W Elec'n* 66:788 Ap 24 '15  
New galvanic cell. *Sci Am* 113:68 J1 17 '15  
New primary battery; development of a cell using lead-mercury and carbon electrodes in sulphuric-nitric acid electrolyte. H. Bollini. *diag Mr* 49:436-7 Je '15  
Selenium cell making. *Sci Am S* 79:187 Mr 20 '15  
 Weston cells. *Elec W* 66:662-3 S 18 '15  
*See also* Storage batteries

**Electric bells**

Bell-ringing transformers. *diag Elec R & W Elec'n* 66:150-1 Ja 23 '15

Electric bells; abstract. C. Turnbull. *diag Elec W* 66:31 J1 3 '15

**Electric boilers. See Boilers Electric heating****Electric buses**

Double-deck electric buses at Vienna. *diag Ry J* 45:51 Ja 2 '15

New electric omnibus for York, England. *diag Engineer* 119:287-8 Mr 19 '15; Abstract. *Automobile* 32:720 Ap 22 '15

**Electric cables**

Analysis of cable faults. *diag Elec W* 65:116 Ja 9 '15

Cable jointing. *diag Elec W* 64:1111 D 5 '14

Cables. C. J. Beaver. *diag Am Inst E E Pro* 34:53:57-60; Discussion. 53:81-102, 356-73 D 15 '14, Mr 1 '15; Abstract. *Elec W* 64:1162-3, 1212-13 D 12-19 '14

**Electric cables—Continued**

- Causes of joint failure pointed out to splicers. *Il Elec W* 65:1122-3 My 1 '15
- Development of armored cable. H. R. Gilson. *Il Elec R & W Elec'n* 66:1150-1 Je 19 '15
- Effect of moisture in the earth on temperature of underground cables. L. J. Imlay. *diags Am Inst E I Pro* 34:363-70 P '15; Abstract and discussion. *Illec R & W Elec'n* 66:339-90 F 27 '15; Discussion. *Am Inst E I Pro* 34:2615-19 N '15
- Fargo's cable connectors. *Il Elec W* 66:101-2 J1 10 '15; *Ry Age* 59:572 N 24 '15
- Flexible support for lead-covered cable. *diags Illec Ry J* 46:800 N 18 '15
- One-piece splice vs. wrapped joint in feeder cable splicing practice. S. L. Foster. *Il Elec Ry J* 46:955-6 N 6 '15
- Sag-tension calculations. H. Pender. *Illec W* 66:344-5 Ag 14 '15
- Steel and bimetallic conductors as a substitute for copper and aluminum. R. W. Esch. *Illec W* 65:1466-7 Je 5 '15
- Steel-reinforced aluminum cables. E. T. Driver and R. V. Pannell. *Illec W* 66:524-6 N 4 '15
- Sterling outlet plate and connector for armored cables. *Il Elec R & W Elec'n* 67:589 S 25 '15
- Voltage testing of cables. W. I. Middleton and C. L. Dawes. *Il diag Am Inst E I Pro* 33:987-1008 Jo '14; Abstract. *Illec R & W Elec'n* 65:32-3 J1 4 '14; Discussion. *Am Inst E I Pro* 34:70-8 Ja '15
- Wiping a lead-covered cable. H. B. Weightman. *Il Elec R & W Elec'n* 66:901-2 My 15 '15
- See also Cables, Submarine; Electric distribution; Electric wire and wiring; Insulation; Telephone cables
- Electric cars.** See Motor cars (railroad)
- Electric cells.** See Electric batteries
- Electric circuit breakers**
- Automatic reclosing circuit-breaker. M. C. Haney. *diag Power* 41:108 Ja 19 '15
- Automatic reclosing circuit-breakers. M. C. Haney. *Il diag Colliery* 35:560 My '15
- Automatic reclosing circuit-breakers. *Il diag Illec R & W Elec'n* 66:224 My 15 '15; *Illec Rly J* 45:996 My 22 '15
- Converter station of Aluminum company of America, Maryville, Tenn. *Il Power* 41:776-7 Jo 8 '15
- Oil circuit-breakers. *Il Elec R & W Elec'n* 66:1171-2 Je 19 '15; *Illec W* 65:1045 Ja 19 '15
- Oil circuit breakers: notes on new phenomena and tendencies in design. K. C. Randall. *Il Am Inst E I Pro* 34:271-83 P '15; Discussion. 34:2673-81 C '15
- Electric circuits**
- Equivalence of Wheatstone bridge to three parallel circuits. A. H. Adams. *Illec W* 66:406 Ag 21 '15
- Locating faults by the drop-of-potential method. H. S. Percival. *Illec R & W Elec'n* 67:983-5 N 27 '15
- Mechanical forces in circuits carrying heavy currents; abstract. P. V. Hunter. *Illec W* 64:1259 D 26 '14
- See also Electric conductors; Electric currents; Electric distribution; Electric lines; Electric transmission
- Electric code.** See National electrical code
- Electric conductivity**
- Absolute zero. M. Dushman. *Gen Illec R* 18:243-7 Ap '15
- Conductivity and viscosity of solutions of electrolytes in formamide. L. B. Davis, W. S. Putnam and H. C. Jones. *Il diags J Fr Inst* 180:567-601 N '15
- Conductivity of metals. J. J. Thomson. *Sci Am* 80:114-15 Ag 21 '15
- Electric strength of air. J. B. Whitehead. *Am Inst E I Pro* 34:843-65 My '15; Discussion. 34:2997-3005 T '15
- Electrical conductivity imparted to liquid air by alpha rays. *Sci Am* 87:191 Mr 30 '16
- Electrical resistance as affected by very low temperatures. Hibley *J* 29:106-7 Ja '15; Same. *Sci Am* 87:82 P 6 '15
- Electron theory of electric conduction in metals. J. P. Minton. *Gen Illec R* 18:204-9 Mr '15
- High temperature investigation and a study of metallic conduction. E. F. Northrup. *J Fr Inst* 179:621-62 Je '15; Abstract. *Illec W* 65:1614-15 Jo 19 '15
- Methods, data, and new apparatus for measuring electrical conductivity above 1500° C. of vapors at normal pressure. E. F. Northrup. *Il J Fr Inst* 179:337-53 Mr '15
- 99.84-per-cent-pure iron for electrical purposes. *Illec W* 66:213-14 J1 24 '15
- Potential of silver in nonaqueous solutions of silver nitrate. V. L. Gibbons and F. H. Getman. *ibid diags Am Chem Soc: J* 36:1630-55 Ag '14
- Preliminary study of the conductivity of certain organic acids in absolute ethyl alcohol at 15°, 25° and 35°. J. P. Wightman, J. H. Wiesel and H. C. Jones. *diags Am Chem Soc J* 36:2243-59 N '14
- Sensitive criterion of the precision and of constant errors in the conductance data of weak electrolytes, the determination of the molar conductance of organic electrolytes at zero concentration and a study of the correction for the specific conductance of the conductivity of water. C. G. Derick. *Am Chem Soc J* 36:2268-83 N '14
- Studies in conductivity; the conductivity of some formates and of hydrogen chloride in (anhydrous) formic acid; cases of apparent agreement of strong electrolytes with the mass law. H. I. Schlesinger and A. W. Martin. *diags Am Chem Soc J* 36:1589-1620 Ag '14
- Study of alcoholic solutions of cadmium iodide. F. H. Getman and V. L. Gibbons. *Am Chem Soc J* 37:1990-6 N '15
- Sulphur as a conductor. C. A. Butman. *Illec W* 64:1256 D 26 '14
- See also Electric conductors; Electric measurement; Electric resistance; Hall effect
- Electric conductors**
- Effects of bends on electrical conductors. P. Jackson. *Engineer* 118:556 D 11 '14; Same. *Sci Am* 87:173 Mr 13 '15
- Experimental researches on skin effect in conductors. A. E. Kennelly, F. A. Laws and P. H. Morse. *Il diags Am Inst E I Pro* 34:1749-1809; *ibid diags* 1809-14 Ag '15
- Receiving-end impedance of a conducting line loaded at both ends. A. E. Kennelly. *Illec W* 66:182-4 J1 21 '15
- See also Electric cables; Electric distribution; Electric transmission; Electric wire and wiring; Lightning conductors
- Electric conduits**
- Conduit wiring on plaster-board partitions and ceilings. C. M. Durfee. *diags Illec W* 64:1254-5 D 26 '14
- Flexible metallic conduit in finished-building wiring. T. Croft. *diags Illec R & W Elec'n* 66:421-3 Mr 6 '15
- Installation of rigid-conduit wiring in finished buildings. T. Croft. *diags Illec R & W Elec'n* 66:379-82 P 27 '15
- Lighting company to use underground conduits of telephone company by rental. *Illec R & W Elec'n* 66:378 P 27 '15
- N. B. L. A. committee report on underground construction. *diag Illec W* 65:1519-20 Jo 13 '15; *Illec R & W Elec'n* 66:1112-13 Jo 12 '15
- Outfit for making special conduit bends. *Illec R & W Elec'n* 67:20 J1 3 '15
- Overhead concrete ducts for a factory distribution system. *Illec W* 66:1632 N 6 '15
- Underground wires on the Panama railroad. *Il Ry Age* 58:451-3 Mr 12 '15
- Wiring and conduit work at the Panama-Pacific exposition. A. A. Willoughby. *Il diag Illec R & W Elec'n* 67:305-8, 472-4 Ag 28, N 11 '15
- See also Electric cables; Electric conductors; Electric distribution; Electric wire and wiring
- Electric contact strips**
- Contact strips for electric signs and lamps. *Illec W* 66:603 S 11 '15
- Electric contractors**
- Advertising for electrical contracting work. *Illec W* 65:1061 Ap 24 '15

**Electric contractors—Continued**

- Annual convention of New England contractors at Springfield, Mass., Sept. 21-23. Elec R & W Elec'n 67:607-11 O 2 '15
- Bookkeeping and cost-keeping for electrical contractors. L. W. Moxey, Jr. Elec W 66:1153-5 N 20 '15
- Broadening the contractor; what co-operation between inspector, contractor and journeyman has done in Louisville. Elec W 65:554-5 F 27 '15
- Business hints for contractor and dealer. C. D. Crain, Jr. Elec R & W Elec'n 66:682; 67:188-9, 476-6 Ap 10, JI 31, S 11 '15
- By-laws of California association. Elec R & W Elec'n 67:841-3 N 6 '15
- California association of electrical contractors and dealers meeting, San Francisco, Sept. 24, 1915. Elec R & W Elec'n 67:612 (O) 2 '15
- Checking labor estimates in electrical contracting. Elec W 65:554 F 27 '15
- Contractor and the automobile. C. D. Crain, Jr. Elec R & W Elec'n 66:423-5 Mr 6 '15
- Contractors' cost-keeping system. Elec W 66:797-9 Mr 27 '15
- Contractors' office forms and systems. M. J. Lavallee. Elec R & W Elec'n 67:602-3 JI 10 '15
- Convenient estimate and proposal sheets. Elec W 65:556-7 F 27 '15
- Co-operation between electrical contractors and jobbers. Elec R & W Elec'n 67:843-4 N 6 '15
- Co-operation between electrical contractors and jobbers. W. L. Goodwin. Elec R & W Elec'n 67:282-5 Ag 14 '15
- Co-operation of the central stations with the electrical contractors and dealers in electrical supplies. N. V. Walton. Elec R & W Elec'n 67:281-2 Ag 14 '15
- Doing business on low overhead expense; W. B. Perry electric company, of Brooklyn. Elec W 65:544-6 F 27 '15
- Electrical contractors' association of Wisconsin. Elec R & W Elec'n 66:162-3 Ju 23 '15
- Estimating. C. R. Kreder. Elec R & W Elec'n 66:196-8 Ju 30 '15
- Handling out-of-town work. A. W. Lindgren. Elec R & W Elec'n 67:61 JI 10 '15
- How the contractor can know where he stands. L. W. Moxey, Jr. Elec W 66:870-3 O 16 '15
- How to estimate cost and keep accounts. J. P. Cogdill. Elec W 66:818 (O) 9 '15
- Illinois contractors hold semi-annual convention. Elec R & W Elec'n 66:164 Ju 23 '15
- Insurance saving and concentric wiring discussed by Illinois contractors. Elec W 66:254-6 Ju 23 '15
- Labor costs in interior construction. L. W. Moxey, Jr. Elec W 66:264-7 O 23 '15
- Massachusetts contractors convene. Elec W 66:773-4 O 2 '15
- National electrical contractors' association 15th annual convention. Elec R & W Elec'n 67:203-4 JI 31 '15
- New England electrical contractors' convention, Springfield, Mass.; abstracts of papers. Elec W 66:820-30 O 9 '15
- Office methods for the electrical contractor. Elec R & W Elec'n 66:550-2 Mr 20 '15
- Office system and forms for the electrical contractor. C. M. Converse. Elec R & W Elec'n 67:150-2 JI 24 '15
- Record forms for the electrical contractor. Elec R & W Elec'n 66:724-5 Ap 17 '15
- Semi-annual convention of Minnesota electrical contractors' association. Elec R & W Elec'n 66:246 F 6 '15
- Shedfield city and electrical contractors. Elec R & W Elec'n 65:1132-3 D 12 '14
- Why Jones went broke. Elec R & W Elec'n 66:341-2 F 20 '15
- Electric control**
- Automatic control. C. W. Place. Am Inst E E Pro 34:2429-35 O '15
- Automatic electric control for hydraulic accumulators. II diag Engineer 120:301-2 S 24 '15
- Automatic electric control of pumps. G. J. Kirchhammer. II diag Power 41:811-14 Jo 15 '15
- Centrally controlled electric haulage systems. R. M. Woodford. II Eng Soc W 1'a 31:584-97; Discussion. 31:598-608 O '15

- Control and protection of electric systems. C. P. Stimmelz. J Jr Inst 180:1-16 JI '15; Same. Gen Elec R 18:887-94 S '15; Same cond. Power 42:176-7 Ag 3 '15; Same cond. Sel Am S 80:202-3 S 25 '15
- Control for machine-tool motor drives. II Elec W 66:302 Ag 7 '15
- Electric control for doors. II Elec W 66:1049 N 6 '15
- Electro-thermostatic control of radiators. Sel Am 112:304-4 Ap 17 '15
- Generator control. P. M. Heldt. diag Horseless Age 35:610-11, 678-9, 708-11 My 5, 19-26 '15
- Operating with 5000-volt direct current. N. W. Storer. II diag map Elec Ry J 46:660-3 O 2 '15

*See also* Electric controllers; Electric lamps, Tungsten—Control; Electric motors—Control; Electric railroads—Control

**Electric controllers**

- Alternating-current coal hoist. R. E. Brown. II Am Inst E E Pro 34:616-22 Ap '15; Abstract, with discussion. Elec R & W Elec'n 66:781-2 Ap 24 '15; Discussion. Am Inst E E Pro 34:2893-914 N '15
- Alternating-current controllers for steel mills. A. Simon. II diag Am Inst E E Pro 34:731-61 My '15; Same. Iron Tr R 57:477-814, 527-9 S 9-16 '15; Abstract. Elec W 65:1195-6 My 8 '15; Discussion. Am Inst E E Pro 34:2895-914 N '15
- Arc-light controller for motion picture projection of apparatus. II Sel Am 112:272 Mr 20 '15
- Contractor closed and opened. J. A. Horton. diag Power 41:208 F 9 '15
- Control of direct current hoists in iron and steel mills. G. E. Stoltz and W. O. Lum. II diag Am Inst E E Pro 34:723-9 My '15; Discussion. 34:2947-65 D '15
- Direct-current control for hoisting equipment in industrial plants. W. T. Snyder. diag Am Inst E E Pro 31:696-710 My '15; Same (How to buy hoist controllers). Iron Tr R 56:871-4 Ap 29 '15; Same cond. Engineer 120:208-10 Ag 27 '15; Abstract, with discussion. Elec R & W Elec'n 66:780-1 Ap 24 '15; Discussion. Am Inst E E Pro 34:2947-65 D '15
- Direct-current hoist equipment in industrial plants; discussion at meeting of A. I. E. E. Elec W 65:1124 My 1 '15
- Electric latchway control gear for cranes. II diag Engineer 119:176-7 My 14 '15
- Industrial control in the foundry. R. H. McLain. II Am Inst E E Pro 31:87-97 Ap '15; Same. Foundry 43:291-3 My '15; Abstract, with discussion. Elec R & W Elec'n 66:777-8 Ap 21 '15; Discussion. Am Inst E E Pro 34:2984-96 D '15
- Mill controllers. H. E. Stratton. Am Inst E E Pro 34:599-614 Ap '15; Same. Iron Tr R 58:820-4 Ap 22 '15; Abstract, with discussion. Elec R & W Elec'n 66:778-80 Ap 21 '15; Discussion. Am Inst E E Pro 34:2869-94 N '15
- Motor control in foundries and steel mills; discussion at meeting of A. I. E. E. Elec W 65:1081-2 Ap 24 '15
- Motor control in steel mills discussed at Pittsburgh. Elec R & W Elec'n 66:777-82 Ap 24 '15
- Oscillating circuit controller for railway signaling circuits. II Elec R & W Elec'n 65:1193-4 D 19 '14
- Selection of electric motors and controllers. S. H. Lilly. Foundry 43:60-3 F '15
- Steel mill controllers from the operator's standpoint. J. S. Riggs. Am Inst E E Pro 34:715-22 My '15; Discussion. 34:2869-94 N '15
- See also* Electric motors; Rheostats
- Electric cooking**
- Automatic electric cooker for steam cooking on improved fireless principle. II Elec R & W Elec'n 67:249-50 Ag 7 '15
- Central station investment to serve electric-range load. Elec W 66:706 S 25 '15
- Cooking with electricity the other side of the story. Am Gas Light J 103:205 S 27 '15
- Economical electric cooking. P. W. Gunnar. diag Eng M 49:580-3 JI '15
- Electric cooking. Elec R & W Elec'n 66:644 Ap 3 '15
- Electric cooking and heating in private houses. W. A. Elliott. Inst E E J 52:42-51; Discussion. 52:51-2, 822-7 D 1 '14, Ju 15 '15

**Electric cooking—Continued**

- Electric cooking grows in popularity at Wildwood, Ohio. *Il Elec W* 65:738 Mr 20 '15
- Electric cooking in apartment houses. *Il Elec W* 65:982-3 O 3 '15
- Electric cooking in Poplar Bluff, Mo. *Elec R & W Elec'n* 65:239-40 F 8 '15
- Electric cooking, mainly from the consumer's point of view. W. L. Cooper. *diag Inst E* 10 J 53:473-84; Discussion, 53:481-97, 676-90, 888-7 Ap 1, My 1, Je 15 '15
- Electric heating and cooking. P. W. Gumaer. *Il Sci Am* 118:498-4 D 4 '15
- Eliminating the coal range from the kitchen. H. C. Spaulding. *Il Sci Am* 112:64 Ja 16 '15
- Interesting electric-cooking costs from Germany. *Elec W* 65:702 S 25 '15
- Large electric kitchen; abstract. K. Perlewitz. *diag Elec W* 64:115-16 D 5 '14
- New possibilities of electric heating and cooking brought out in meeting of British central stations. *Elec R & W Elec'n* 65:334 F 20 '15
- Practical education in electric cooking: domestic science department of the University of New Mexico. H. W. Alexander. *Il Elec W* 65:232-3 Ja 23 '15
- Promoting electric cooking through the rising generation. *Il Elec W* 65:1197-8 N 27 '15
- What policy is being adopted by gas companies to meet electric stove competition? V. S. McIntyre. *Am Gas Light J* 103:220 O 4 '15

See also Electric ovens; Electric stoves

**Electric current converters**

See also Electric transformers

**Electric current rates. See Electric power—Rates****Electric current rectifiers**

- Aluminum rectifier. G. Schulze. *Elec W* 65:1552 Je 12 '15
- Construction of a vibrating rectifier for charging automobile ignition batteries. C. Franasz. *diag Sci Am* 84:108-9 Ag 14 '15
- Mechanical rectifier for heavy currents. *Elec W* 64:1263 D 26 '14
- Mercury-arc rectifier for charging small batteries. *Il Elec R & W Elec'n* 67:384 Ji 10 '15; *Elec W* 66:102 Ji 10 '15
- Mercury vapor rectifier locomotive an accomplished fact. *Il diag Elec R & W* 44:1343 D 19 '14
- New device for rectifying high tension alternating currents; the kenotron. S. Dushman. *diag Gen Elec R* 18:156-67 Mr '15; Abstract. *Elec W* 65:659-60 Mr 13 '15
- Pure electron discharge and its applications in radio telegraphy and telephony. I. Langmuir. *diag Gen Elec R* 18:332-4 My '15
- Small mercury-vapor rectifier for charging automobile lighting batteries. *Il Elec R & W Elec'n* 65:1010 My 20 '15; Automobile 32:904 My 20 '15
- Volages with electrolytic rectifier. *diag Elec R & W Elec'n* 67:669, 750 O 9, 23 '15

**Electric currents**

- Contact electrification and the electric current. F. Sanford. *Sci Am* 84:322-3 N 20 '15
- Diminished electric current: an Italian device by which a heating circuit is useless for lighting. G. Pacherle. *diag Ing M* 48:739-40 F '15
- Distributing potential over a string of insulators. J. L. Bronneman and H. M. Crothers. *diag Elec W* 64:1095-9 D 5 '14
- Growth of current in circuits of negative temperature coefficient of resistance. F. W. Lyle. *Gen Elec R* 18:1139-30 D '15
- Harmonics in transformer magnetizing currents. J. F. Peters. *diag Am Inst E* 10 Pro 34:1657-73 Ag '15
- Infinite duration of transients. C. L. Clarke. *Gen Elec R* 18:73 Ja '15
- Measuring the current in d. c. circuits. O. A. Knopp. *Il diag Elec W* 65:751-2 O 2 '15
- Receiving-end impedance of conducting line loaded at both ends. A. E. Kennelly. *Elec W* 65:182-4 Ji 24 '15

See also Concrete. Effect of electricity on; Eddy-currents; Electric circuits; Electric conductivity; Electric conductors; Electric distribution; Electric measurement; Electric meters; Electric testing; Electric transformers; Electric transmission; Electric waves

**Electric currents. Alternating**

- Alternating current electrolysis. J. C. Ghosh. *diag Am Chem Soc J* 36:2333-46 N '14
- Analysis of unbalanced three-phase systems. L. G. Stokvis. *Elec W* 65:1111-15 My 1 '15
- Analytical and graphical solution for non-sinusoidal alternating currents. F. M. Mizushima. *Am Inst E* 10 Pro 34:1075-86 Je '15; Abstract. *Elec W* 65:3 Ji 3 '15
- Calculation of sudden short circuit phenomena of alternators. N. S. Diamant. *diag 6 pis Am Inst E* 10 Pro 34:2043-79 S '15
- Calibration of current transformers by means of mutual inductance. C. Fortescue. *diag 6 pis Am Inst E* 10 Pro 34:1199-1215 Je '15
- Distortion of alternating current wave caused by cyclic variation in resistance. F. Rodell and G. C. Mayer. *diag Am Inst E* 10 Pro 34:177-86 F '15; Abstract. *Elec W* 65:472 F 20 '15; Discussion. *Am Inst E* 10 Pro 34:2584-9 O '15
- Experimental researches on skin effect in conductors. A. E. Kennelly, F. L. Laws and P. H. Pierce. *Il diag Am Inst E* 10 Pro 34:1749-1809; Bibliog. 1809-14 Ag '15
- Flow of energy. R. A. Philip. *diag Am Inst E* 10 Pro 34:455-84 Ap '15; Same. *W Soc E* 10 J 20:444-72 My '15; Same cond. *Engineer* 120: 67-9 Ji 16 '15; Same cond. *Power* 42:352-5 S 7 '15; Abstract. *Elec W* 65:1036-6 Ap 24 '15; Discussion. *W Soc E* 10 J 20:472-7 My '15
- Magnetic behaviour of iron under alternating magnetization of sinusoidal wave-form. N. W. Melachian. *diag Inst E* 10 J 53:809-19 Je 15 '15
- Parallel operation of frequency changers. G. H. Rettew. *diag Gen Elec R* 18:835-8 Ag '15
- Producing vector diagrams experimentally: improved apparatus designed to visualize alternating-current diagrams. A. E. Kennelly and H. G. Crane. *Il diag Elec W* 65:985-6 Ap 17 '15
- Unbroken alternating current for cable telegraphy. G. O. Squier. *diag J Fr Inst* 180:311-34 S '15
- What to call alternating-current motors. C. A. Adams. *Elec W* 65:339 Ag 14 '15
- What to call alternating-current motors; discussion. V. A. Pynn; H. Rosenberg. *diag Elec W* 65:371-5 O 30 '15

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**Electric discharges**

- Pure electron discharge and its applications in radio telegraphy and telephony. I. Langmuir. *diag Gen Elec R* 18:327-39 My '15
- Sustained radio-frequency high-voltage discharges. H. J. Ryan and R. G. Marx. *Elec R & W Elec'n* 67:628 O 2 '15
- Unstable states in arc and glow. W. G. Cady. *Met & Chem Eng* 13:860-9 N 15 '15; Abstract. *Elec W* 65:1156-7 N 20 '15

See also Cathode rays; Ionization; Radioactivity; X rays

**Electric distribution**

- Alarm arrangement designed for the purpose of indicating grounds. *plan Elec W* 65:812 O 9 '15
- Apparatus for determining voltage at feeder taps in network systems. *Il Elec W* 65:300 Ja 30 '15
- Arc phenomena. A. G. Collins. *Il diag Am Inst E* 10 Pro 34:2081-2100 S '15
- Automatic voltage regulators. W. H. Acker. *Il diag Elec W* 65:127-8 Ja 9 '15
- Battery reserve in an alternating-current system. *diag Elec W* 65:465-9 Ap 20 '15
- Characteristics of the three-wire generator: analysis of its behavior when used as a balancer in a direct current lighting system. C. J. Ferguson. *diag Elec W* 64:1190-1204 D 19 '14
- Converting a distribution system. *Elec W* 65: 86-7 Ji 10 '15
- Distribution system for power purposes: system of the Western Canada power company. F. D. Nims. *Il Am Inst E* 10 Pro 33:1147-52 Ag '14; Discussion. 34:161-7 Ja '15
- Economics of electric railway distribution. H. F. Marshall. *Elec Ry J* 44:1250 D 5 '14; Same (Standardization). *Elec R & W Elec'n* 65:1147 D 12 '14
- Effect of third harmonic in voltage wave. R. C. Powell. *diag Elec W* 65:157-8 Ja 16 '15

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- Effect of voltage changes on electrical apparatus. *Elec W* 66:535 S 4 '15
- Effects of remote feeder taps on schedule speed. *N: Stahl. Elec Ry J* 45:991-3 My 22 '15
- Electrical equipment of Panama-Pacific exposition. *II diag plan Elec W* 64:1311-7 D 26 '14
- Fargo ground points. *II Elec R & W Elec'n* 67:250-1 Ag 7 '15
- Feeder-tap protection for d.c. apparatus and a few suggestions regarding the care of commutators. *C: H. Smith. Elec Rty J* 46:627-8 Mr 27 '15
- Feeder-tap resistance in rotary-converter practice. *L. P. Creelhus; J. C. Baughor. Elec Ry J* 46:799-800 Ap 24 '15
- Finding an elusive ground. *W: R. Dixon. diag Power* 42:162 Ag 3 '15
- From a.c. to d.c. in the night. *II diag Elec Ry J* 45:542-50 Mr 20 '15
- General notes on grounding. *II. M. Wolf. Gen Elec R* 18:991-5 O '15
- Ground interfered with parallel operation. *J. B. Kilroy. plan Power* 42:203-4 Ag 10 '15
- Ground-wire disconnector. *II Elec Ry J* 46:158 J1 24 '15
- Grounded-secondary systems. *Elec W* 66:1088 N 13 '15
- Load dispatching system of the Columbus railway, power and light company. *II. W. Clapp. II Gen Elec R* 17:912-14 S '14
- Locating faults by the drop-of-potential method. *II. S. Percival. Elec R & W Elec'n* 67:983-5 N 27 '15
- Motor service in a large bolt factory; electrical distribution system of the Reed & Prince manufacturing company, Worcester, Mass. *II diag Elec W* 65:1188-91 My 8 '15
- N. B. L. A. committee report on grounding secondaries. *Elec W* 65:1520 Jc 12 '15
- Part construction plays in getting small loads. *II Elec W* 66:530-2 S 4 '15
- Power distribution on Penn. R. R. at Philadelphia. *II plan Power* 42:685-6 N 16 '15
- Protecting electrical apparatus from self-destruction. *Elec Ry J* 45:659 Ap 3 '15
- Puzzling ground. *T: G. Thurston. diag Power* 11:312-3 Mr 9 '15
- Remotely controlled mock distribution system. *II Elec W* 65:810 Mr 6 '15
- Residential load characteristics. *Elec R & W Elec'n* 66:916 My 22 '15
- Schweitzer automatic instantaneous voltage regulator. *diag Elec R & W Elec'n* 66:271 F 6 '15
- Single-phase loads from polyphase systems. *Engineer* 120:185-6 Ag 20 '15
- Supervising 840 miles of lines; how the load dispatcher of the San Joaquin (Cal.) system adjusts even plant water supply. *L. J. Moore. II map Elec W* 65:1122-4 My 29 '15
- Supplying of power to the Quaker oats company. *J. M. Draballa. II diag Gen Elec R* 18:42-4 Ju '15
- Test of ground plates. *Elec R & W Elec'n* 67:666, 669-70 S 25, O 9 '15
- Ways of hunting trouble on distribution systems. *II diag Elec W* 66:670-82, 638-42 S 11-18 '15
- Why an induction regulator stuck and how it was repaired. *E. C. Parham. Elec W* 66:1147 N 20 '15
- Work of the load dispatcher. *R. R. Robley. II diag Elec W* 65:1118-21 My 29 '15
- See also* Electric cables; Electric conductors; Electric currents; Electric driving; Electric fuses; Electric power; Electric transformers; Electric transmission; Electric wire and wiring; Rotary converters; Switchboards
- Electric driving**
- Air-lift pumps as a central-station load. *diag Elec R & W Elec'n* 66:1191-2 Ja 26 '15
- Application of electric drive in flour mills and similar industries; abstract. *T. B. Simper. Elec R & W Elec'n* 66:192-3 Ja 30 '15
- Application of electric motors to gold dredges. *C. B. Rosenblatt. II diag Am Inst E* 19 Pro 38:1105-76 Ag '14; Abstract. *Eng & Min J* 98:739-40 O 24 '14; Discussion. *Am Inst E* 19 Pro 34:144-54 Ja '15
- Application of electric power in a lumber yard. *II diag Elec R & W Elec'n* 66:400-1 F 27 '15
- Application of electricity to the ore handling industry. *(C. L. Gilpin. diag Am Inst E* 19 Pro 34:397-415 Mr '15; Abstract. *Elec W* 65:996-7 Ap 17 '15
- Brick-plant production increased by electric drive. *II Elec W* 65:794 Mr 27 '15
- Buying power for the rolling mill. *R. Willey and W. Sykes. Iron Tr R* 67:530-3 S 16 '15
- Case where motor drive just suits; application in a shoddy mill. *II Elec W* 66:415 Ag 21 '15
- Characteristics of electric motors involved in their application. *D. B. Rushmore. Am Inst E* 19 Pro 34:187-93 F '15; Abstract and discussion. *Elec W* 65:523 F 27 '15; Discussion. *Am Inst E* 19 Pro 34:2747-803 N '15
- Control of direct current hoists in iron and steel mills. *C. E. Stoltz and W. O. Lam. II diag Am Inst E* 19 Pro 34:723-9 My '15; Discussion. 31:2947-65 O '15
- Cost of electric dredging for land reclamation. *San Diego, Cal. L. R. W. Allison. Eng & Contr* 14:295-6 Ag 4 '15
- Doing it electrically at West Point. *J. A. Randolph. II Elec W* 66:374-5 S 11 '15
- Economies of motor drive. *II. F. Stratton. Iron Tr R* 65:527-30 F S 17 '14; Same cond. *Elec R & W Elec'n* 65:827-8 O 21 '14; Abstract. *Ind Eng* 11:463-6 O '11
- Electric drive effects economy in large tire factory. *Elec R & W Elec'n* 67:104-5 J1 17 '15
- Electric drive for economic operation and development of cement mills. *J. B. Porter. Am Soc M E J* 37:157-8 Mr '15
- Electric drive for grain elevators. *Elec R & W Elec'n* 66:378 F 27 '15
- Electric drive in a cottonseed-oil mill. *J. W. Ruff. Elec W* 66:278-9 O 30 '15
- Electric drive in building construction. *II Elec W* 66:675 Mr 13 '15
- Electric drive in confectionery making. *II Elec W* 65:791-2 Mr 27 '15
- Electric drive supplies steam engine and belt transmission in paper-bag factory. *II Elec W* 65:383 Ap 10 '15
- Electric driving of wooden mills. *J. F. Crowley. Ind Eng* 15:81-3 Ag '15
- Electric motor drive; method of interlocking machines for simultaneous operation in the new plant of the Commercial milling company, Detroit, Mich. *II diag plan Elec W* 65:105-9 Ju 9 '15
- Electric motor in the printing industry. *W. C. Yates. II Gen Elec R* 18:1136-12 J1 '15
- Electric motors in the Portland cement industry. *Elec W* 65:111 Ju 9 '15
- Electric power in the machine shop. *A. L. De Leeuw. Iron Tr R* 67:988-90 J1 7 '15
- Electric power in the textile industry. *C. A. Chane. II Gen Elec R* 18:510-50 Jc '15
- Electrical construction in machine shops and foundries. *N. G. Meade. diag Elec R & W Elec'n* 67:116 N 11 '15
- Electrical equipment of the Vermont marble company. *J. Eaton. II Gen Elec R* 18:1015-25 N '15
- Electrical practice in steel mills. *D. M. Petty. Iron Tr R* 67:941-2 N 11 '15
- Electrically driven chime mill. *II Elec R & W Elec'n* 66:1122-3 Jc 12 '15
- Electrically operated brick factory at Springfield, Ill. *II Elec W* 65:671-3 Mr 13 '15
- Electrically operated coal plant. *II Elec W* 65:994-5 Ap 17 '15
- Electrically operated contractor's plant for building Kensler dam. *A. W. Carroll. II Eng Rec* 71:118-20 Ja 2 '15
- Electrically operated phonograph. *II diag Elec W* 65:180 Jc 5 '15
- Electricity for municipal pumping. *II Elec R & W Elec'n* 67:653-6 O 9 '15
- Electricity in a cold-storage plant. *II Elec R & W Elec'n* 67:667-9 Ar 28 '15
- Electricity in a Massachusetts shoe factory. *T. B. Bond. II Elec W* 66:88-90 J1 10 '15
- Electricity in a modern saw mill. *II Elec R & W Elec'n* 66:290-2 F 13 '15
- Electricity in a wholesale grocery establishment. *II Elec R & W Elec'n* 67:503-6 S 18 '15
- Electricity in an automobile assembling plant. *II Elec R & W Elec'n* 66:329-31 F 20 '15

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- Electricity in an ore-treating plant. *Il Elec R & W Elec'n* 66:481-4 Mr 13 '15
- Electricity in bakeries. *Il Elec R & W Elec'n* 66:715-21 Ap 17 '15
- Electricity in breweries. *Il Elec R & W Elec'n* 66:1144-6 Je 10 '15
- Electricity in brick-making. *Il Elec R & W Elec'n* 66:65-9 Ja 9 '15
- Electricity in cement manufacture. N. G. Meade. *Il Elec R & W Elec'n* 67:273-5 Ag 14 '15
- Electricity in chair manufacturing. *Il Elec R & W Elec'n* 66:479-82 My 29 '15
- Electricity in cotton duck mills. *Il Elec R & W Elec'n* 66:873-9 Ap 10 '15
- Electricity in cotton gins. J. H. Mosley. *Il Elec R & W Elec'n* 67:139-45 Ji 31 '15
- Electricity in hardware manufacturing. *Il Elec R & W Elec'n* 66:801-6 My 1 '15
- Electricity in harvesting machinery works. *Il Elec R & W Elec'n* 67:745-50, 883-8 O 23, N 13 '15
- Electricity in ice-cream manufacture. *Il Elec R & W Elec'n* 66:413-15 Mr 6 '15
- Electricity in ice-cream manufacturing. *Il Elec R & W Elec'n* 67:55-7 Ji 10 '15
- Electricity in implement manufacturing. W. J. Kyle. *Il Elec R & W Elec'n* 67:597-101 Ji 17 '15
- Electricity in large steel warehouses. *Il Elec R & W Elec'n* 67:463-5 S 11 '15
- Electricity in laundries. *Il Elec R & W Elec'n* 66:617-20 Ap 3 '15
- Electricity in lime manufacture. A. C. Hewitt. *Il Elec R & W Elec'n* 67:181-4 Ji 31 '15
- Electricity in magazine publishing. *Il Elec R & W Elec'n* 66:106-7 Ja 16 '15
- Electricity in milling houses: relative merits of isolated-plant and central-station service. *Il Elec R & W Elec'n* 65:1123-8 D 13 '14
- Electricity in manufacture of wood-pulp paper. *Il Elec R & W Elec'n* 67:223-6 Ag 7 '15
- Electricity in manufacturing. Power 40:901-2 D 22 '11
- Electricity in marble quarrying. *Il Elec R & W Elec'n* 67:963-6 N 27 '15
- Electricity in packing plants. *Il Elec R & W Elec'n* 66:145-8 Ja 23 '15
- Electricity in paper making. W. B. Conant. *Il Elec R & W Elec'n* 66:371-5 F 27 '15
- Electricity in printing plants. *Il Elec R & W Elec'n* 66:851-5 My 8 '15
- Electricity in rubber mills. *Il Elec R & W Elec'n* 66:573-9 Mr 27 '15
- Electricity in sand and gravel plants. *Il Elec R & W Elec'n* 67:599-602 O 2 '15
- Electricity in stone quarries and asphalt plants. *Il Elec R & W Elec'n* 67:315-18 Ag 21 '15
- Electricity in textile mills. *Il Elec R & W Elec'n* 67:789-91 O 30 '15
- Electricity in the largest lumber mill; Weyerhaeuser co., Everett, Wash. A. H. Onstad. *Il Elec W* 66:1080-1 N 13 '15
- Electricity in the lumber industry. L. F. Whitney. *Il Elec W* 66:1080-1 N 13 '15
- Electricity in the manufacture of electrical machinery. *Il Elec R & W Elec'n* 66:287-9 F 13 '15
- Electricity in the publishing business. *Il Elec R & W Elec'n* 66:1069-72 D 5 '14
- Electricity in twine and rope mills. *Il Elec R & W Elec'n* 67:551-4 S 25 '15
- Electricity in waterworks plants. L. B. Darling. *Il Elec R & W Elec'n* 66:809-71 My 8 '15
- Electricity in woodworking plants. *Il Elec R & W Elec'n* 66:803-7 My 15 '15
- Electricity saves paper mill \$400 a month. *Il Elec W* 66:873 Mr 13 '15
- Electrification of mills at Bouday. *Il Elec R & W Elec'n* 66:984 My 20 '15
- Electrified milk-distributing depot using central station service. *Il Elec W* 66:850 S 18 '15
- Factors involved in motor applications; outline. D. B. Rushmore. *Am Inst 10 10 Pro* 34: 417-19 Mr '15; Discussion. 34:2666-746 N '15
- Fields of motor application. D. B. Rushmore. *Am Inst 10 10 Pro* 34:1105-13 Jo '15; Discussion. 34:3006-52 D '15
- Fireclay company, Denver, increases profits by use of central-station service. *Il Elec R & W Elec'n* 67:804 O 2 '15
- Fractional horse power motor load. B. Lester. *Il Am Inst 10 10 Pro* 34:395-95 Mr '15; Same cond. *Eng M* 49:268-71 My '15; Abstract. Power 41:589-90 Ap 27 '15; Discussion. G. H. Garcelon. *Am Inst 10 10 Pro* 34:2658-5 N '15
- Hamilton electric incinerator. *Il Elec Ry* 46:115-16 Ji 17 '15; Same. *Eng N* 74:49-51 Ji 8 '15; Same. *Ity* 17:213-14 Ag 14 '15
- Heavy electric reversing mills. W. Sykes. *Il Iron Tr* 12 55:1181-3-4 D 24 '14
- How electricity is used in handling sea-food. *Il Elec W* 66:450-1 Ag 28 '15
- How one operator controlled an air-compressor motor and used it to drive a direct-current generator. H. R. Smith. *Il Elec W* 66:468 Ag 28 '15
- Improving motor drive in a corset factory. *Il Elec W* 65:1252 My 15 '15
- Individual motor drive in pen and pencil factory. *Il Elec W* 65:110 Ja 9 '15
- Industrial applications of electricity. A. R. Bush. *Il Gen Elec R* 18:460-82 Je '15
- Large electric hoist. W. Sykes. *Il diag Am Inst 10 10 Pro* 34:1819-27 Ag '15
- Large steel-mill motor drive. *Il Elec W* 66: 1089-90 N 13 '15
- Motor drive adopted for compressors and other equipment in loading (l'a.) ice plant. A. L. Hart. *Il Elec W* 66:1147-8 N 20 '15
- Motor drive for a Bradley helve hammer. W. M. Johnston. *Il diag Ry Age* (Mech ed) 89: 184 Ap '15
- Motor drive in a rock-drill factory. F. D. Burr. *Il Elec W* 65:1700-1 Ja 26 '15
- Motor drive in marble works. *Il Elec W* 65:1192 My 8 '15
- Motor-driven, high-pressure gas pumping installation. J. S. Haug. *Am Gas Light* 7 103: 315-16 N 15 '15
- Motor driving in European cement works. *Il Elec R & W Elec'n* 66:1050-1 Ja 5 '15
- Motor service in a large bolt factory; electrical distribution system of the Reed & Prince manufacturing company, Worcester, Mass. *Il diag Elec W* 65:1188-91 My 8 '15
- Motor sizes for flour-mill machinery. *Il Elec W* 65:418-19 F 13 '15; Same cond. *Ind Eng* 15: 83-4 Ag '15
- Motors operating 3600 r.p.m. directly connected to woodworking surfaces. *Il Elec W* 66:643-4 S 18 '15
- Motors show saving in replacing gasoline engines in brickyard. *Il Elec W* 66:258 Ji 31 '15
- Motors simplify operations in milk depot. J. L. Whitte. *Il Elec W* 66:363-5 Ag 14 '15
- Need of studying energy consumption of manufacturing operations. *Il Elec W* 66:144 Ji 17 '15
- Operating factory motors. S. P. Goodale. *Il diag Elec W* 66:533-4 S 4 '15
- Plant problem solved by purchased service; American manufacturing company, Brooklyn. *Il Elec W* 66:628-33 S 18 '15
- Reversing motor planer drive. *Il Ind Eng* 14: 455-6 D '14
- Selection and application of motors. C. Fox. *Il Elec R & W Elec'n* 66:348-50 F 20 '15
- Use of current for operating cranes to remove trucks from under car bodies. R. M. Hewitt. *Il Elec Ity* 46:638 S 25 '15
- Use of electricity in a newspaper plant; motor and control equipment for production of New York times. *Il Elec W* 66:1627-31 Jo 19 '15

See also Electric distribution; Electric motors; Electric power; Electric transmission; Electricity in refrigeration; Power transmission

**Electric elevators. See Elevators, Electric****Electric engineering**

Advances in electricity. *Il Power* 42:366-8 S 14 '15

Am. Inst. 10. 10. midwinter convention, New York city, February 17-19, 1915. *Il Elec R & W Elec'n* 66:389-90 F 27 '15

Am. Inst. 10. 10. Panama-Pacific convention, San Francisco, September 16-18. *Il Elec R & W Elec'n* 67:507-73 S 25 '15

Am. Inst. 10. 10. 32d annual convention, Dear Park, Md., June 23-July 2; abstracts of papers and discussions. *Il Elec R & W Elec'n* 67:60-75 Ji 10 '15

**Electric engineering—Continued**

- Am. Inst. E. E. 32d annual convention, Deer Park, Md., June 20-July 2; abstracts of papers and discussions. *Elec W* 66:9-11, 62-71 3-10 '15
- Applied electrical science in 1914. A. E. Kennelly. *Elec W* 65:4-5 Ja 3 '15; Same. *Sci Am* 57:51 Ja 23 '15
- Birmingham local section; chairman's address. A. H. Tuller. *Inst E E* 53:263-8 F 1 '15
- Electrical developments. J. Snell. *Elec R & W Elec'n* 65:1097 D 5 '14
- Electrical engineering and race progress. *Sci Am* 57:307 My 15 '15
- Electrical engineering problems. R. G. Hudson and W. V. Lyon. See weekly numbers of *Electrical review* and *western electrician*
- Electrical papers at Manchester meeting of British association for the advancement of science. *Elec R & W Elec'n* 67:372-8 O 9 '15
- Electricity in the construction and operation of the Panama canal. J. Schildhauer. *Diagm Gen Elec R* 18:amp 679-780 Ji '15
- Biographical address of president. J. Snell. *Inst E E* 53:1-13 D 1 '14
- Indexing of electrical engineering subjects. *Elec W* 65:1026-7, 1229 Ap 24, My 15 '15
- International engineering congress; discussions on subjects pertaining to the electrical industry. *Elec W* 65:732-4 O 2 '15
- International engineering congress; report of electrical and related sessions, San Francisco, Sept. 20-25. *Elec R & W Elec'n* 67:614-18 O 2 '15
- Minnesota electrical association 8th annual convention. *Elec R & W Elec'n* 66:837-41 Ap 3 '15
- New England question box convention. *Elec R & W Elec'n* 66:537-40, 598-600 Mr 20-27 '15
- Proposed changes in the code to be considered by electrical committee. *Elec R & W Elec'n* 66:337-40 F 20 '15
- Recent electrical progress. *Engineer* 119:11-12, 33-5 Ja 1-8 '15
- Review of the year 1914: electricity. *Sci Am* 112:7 Ja 2 '15
- Trend of electrical development. P. M. Lincoln. *Am Inst E E* 53:1491-1502 Ag '15; Same. *Gen Elec R* 18:784-9 Ag '15; Abstract. *Sci Am* 58:282-3 O 30 '15
- When electricity was really in its infancy. F. B. Crocker. *Inst E E* 112:487 My 20 '15
- Wisconsin electrical association. *Elec R & W Elec'n* 66:206-9 Ja 30 '15
- See also *Armatures; Commutation (electricity); Dynamoes; Electric apparatus and appliances; Electric contractors; Electric distribution; Electric driving; Electric heating; Electric lighting; Electric lines; Electric machinery; Electric measurement; Electric motors; Electric motors; Electric plants; Electric railroads; Electric transmission; Electric wire and wiring; Electricity; Electricity in construction work; Electricity in mining; Electricity in war; Electricity on ships; Electricity on the farm; Hydroelectric plants; Railroads—Electrification; Telegraph; Telephone; Wireless telegraph*
- Examinations**
- Examination papers set at the associate membership examination of the Institution of electrical engineers, April, 1915. *Inst E E* 53:748-55 My 15 '15
- Laws and regulations**
- Comparative insulation requirements in the United States and European countries. *Elec R & W Elec'n* 65:1133 D 12 '14
- Construction details of temporary motor installations. *Elec R & W Elec'n* 65:1089 D 5 '14
- Electrical code and license law for New York. *Elec W* 66:103 Ji 10 '15
- Electrician's registration bill becomes law in Massachusetts. *Elec R & W Elec'n* 66:1151-2 Ja 10 '15
- Installation rules for gas-filled incandescent lamps. *Elec R & W Elec'n* 67:896 N 13 '15
- Massachusetts electricians' licensing bill. *Elec W* 65:1575 Je 12 '15
- New electrical code for New York. *Elec R & W Elec'n* 67:756-7 O 23 '15
- New electrical rules in Springfield, Mass. *Elec R & W Elec'n* 66:425 Mr 6 '15

Wisconsin commission to adopt standards of electrical construction and operation. *Elec W* 66:909 O 23 '15

Wisconsin standards of electrical construction and operation. *Elec R & W Elec'n* 67:798 O 30 '15

See also *Electric inspection; Electric wire and wiring*

**Safety devices and measures**

- Changes in National electrical code. *Elec W* 66:878-80 Ap 3 '15
- Defense of the Safety code. M. L. Brown. *Elec R & W Elec'n* 65:939-41 My 15 '15
- Electrical safety rules issued. S. W. Stratton. *Elec W* 65:1102-5 My 1 '15
- Improvements in linemen's protectors. *II Elec W* 65:743-4 Mr 20 '15
- National electrical code amended at conference in New York city. *Elec R & W Elec'n* 66:624-8 Ap 3 '15
- National electrical safety code. E. B. Rosa. *Elec W* 65:345-7 Ap 3 '15
- National electrical safety rules. E. B. Rosa. *Elec W* 65:215-17 Ap 10 '15; Same. *Elec R & W* 65:750-1 Ap 17 '15
- Precautions to be observed in inserting cartridge fuses. T. H. Boardman. *Diagm Elec R & W Elec'n* 66:682-4 Ap 10 '15
- Proposed national electrical safety code; preliminary edition. U S Bur Stand Circ 541:1-137 Ap '15
- Safeguarding electrical installation. M. L. Wentz. *Iron Tr R* 57:575 8 23 '15
- Safety rules to be observed in the operation and maintenance of electrical equipment and lines. U S Bur Stand Circ 491:1-50 '14; Abstract. *Elec R & W Elec'n* 65:418-19 Ag 29 '14; Abstract. *J Fr Inst* 178:350-4 8 '14; Abstract. *Power* 40:806-7 D 8 '14
- Taking no chances with electricity. W. Greenwood. *Iron Tr R* 57:535-6 8 16 '15
- Wisconsin considers safety rules. *Elec W* 66:959-60 O 30 '15
- Work of Bureau of standards on safety rules for electrical practice. S. W. Stratton. *Elec W* 64:1188 9 D 19 '14

See also *Electric protective apparatus*

**Study and teaching**

- Apprentice system at the Lynn works of the General electric company. T. Bodde. *Gen Elec R* 18:23-7 Ja '15
- New advanced course in electrical engineering at Columbia university. W. I. Slichter. *II Gen Elec R* 18:240 4 O '15
- Statistics of electrical engineering courses. *Elec W* 66:862 O 16 '15

See also *Chicago central station institute*

**Electric engineers**

- Address to the students' section of the Institution of electrical engineers. J. Snell. *Inst E E* 53:757-62 Je 1 '15
- Electrical graduates in 1914: statistics. *Elec W* 64:1135 D 12 '14
- Trained man and his opportunity discussed by Minnesota engineers and Jovianna. *Elec R & W Elec'n* 65:1143 D 12 '14

**Electric equipment**

- Electrical construction details of Butler electrical building. Chicago. N. C. Meade. *Diagm Elec R & W Elec'n* 65:1182-30 Ja 26 '15
- Electrical equipment and efficient features of the new office building of the Hartford electric light company. *Diagm Elec W* 65:206-9 Ja 23 '15
- Electrical equipment of Belmont tunnel cars. *II Elec R & W* 65:764-5 Ap 17 '15
- Electrical service in furniture store of the Paine furniture company, Boston. *II Elec W* 65:674-5 Mr 12 '15
- Equipment of large publishing house; power plant, interior wiring and special features of the Curtis publishing company's building, Independence square, Philadelphia. *Diagm plans Elec W* 65:2905-11 Ap 10 '15
- Use of electricity in a dental infirmary. *II Elec W* 66:202-4 Ji 24 '15
- See also *Automobiles—Electric equipment; Electric apparatus and appliances; Electricity on ships; Garages, Electric; Railroads—Electric equipment*



Electric fans. See Fans, Electric

### Electric fittings

- Benjamin outlet-box fittings and fixtures. *Il Elec R & W Elec'n* 67:588 S 25 '15  
 Pagrip metal molding and fittings therefor. *Il Elec R & W Elec'n* 66:786-7 Ap 24 '15

Electric flatirons. See Electric irons

### Electric furnaces

- Aluminum nitride. *diag Met & Chem Eng* 13:504 Ag '15  
 Big electric induction furnaces built in 1914. *Il Iron Tr R* 66:335-6 F 11 '15  
 Buffalo electric steel foundry. *Il C. Estep. Il plan Iron Tr R* 66:215-19 Ja 28 '15; Same. *Foundry* 43:1-5 Ja '15  
 Commercial applications of resistance furnaces; abstract. C. W. Bartlett. *Elec W* 65:1528 Je 12 '15  
 Comparative furnace efficiency. R. J. Voeltz. *Met & Chem Eng* 13:357-61 Jo '15  
 Cost of electric furnace steel; experience with the Snyder furnace. F. T. Snyder. *Il diag Iron Age* 96:926-8 O 21 '15  
 Developments in electric brass furnace melting; new type to utilize the pinch effect. G. H. Clamer and C. Hering. *Il diag Foundry* 42:487-90 D '14; Same cond. *Iron Age* 94:1492-5 D 31 '14; Abstract. *Ind Eng* 15:56-7 Jo '15  
 Developments in electrical apparatus during 1914. J. Liston. *Il Gen Elec R* 18:89-90 F '15  
 Electric annealing furnaces. *Iron Age* 95:1017 My 6 '15  
 Electric furnace and the melting of alloys. R. S. Wile. *Iron Age* 95:1008-9 My 13 '15  
 Electric furnace electrodes—their manufacture and use. G. A. Barnett. *Il diag Sibley J* 30:27-32 O '15  
 Electric furnace for gold refining at the Alaska-Treadwell cyanide plant. W. J. Lamm. *Il diag Am Inst Min E Bul* 103:1443-7 J 1 '15; Same. *Met & Chem Eng* 13:566-7 S 1 '15; Excerpt. (Electric precipitate-melting furnace) *Eng & Min J* 100:270-1 Ag 14 '15; Abstracts. *Elec W* 66:251 J 31 '15; *Eng M* 50:456 J '15; Discussion. *Am Inst Min E Bul* 103:2460-8 D '15  
 Electric furnace for reheating, heat treating and annealing. T. R. Bully. *Eng Soc W Pa* 31:255-72 Ap '15; Same. *Met & Chem Eng* 13:558-61 S 1 '15; Same cond. *Ity Ago (Mech ed)* 89:481-2 S '15; Abstract. *Am Soc M J* 37:415-16 J '15; Excerpt. (Heating soaking pits by electricity) *Iron Tr R* 67:105 Ag 26 '15; Discussion. *Eng Soc W Pa* 31:272-83 Ap '15  
 Electric furnace in metallurgical work. D. A. Lyon, R. M. Keeney, and J. F. Cullen. *Il diag U S Bur Mines Bul* 77:1-207 '14; Excerpt. (Electric smelting of ferro-alloys). *Iron Tr R* 66:717-22 [ 765-7 ], 802-7 [ 972-5 Ap 8-15, 20, My 13 '15  
 Electric furnace in the foundry. W. G. Kranz. *Am Inst Min E Bul* 101:327-30 My '15; Same. *Foundry* 43:164-5 Ap '15; Same. *Iron Age* 95:780-1 Ap 8 '15; Same. *Met & Chem Eng* 13:555-6 S 1 '15; Discussion. N. Reimot. *Am Inst Min E Bul* 103:2507-11 D '15; Same. *Met & Chem Eng* 13:660 O 1 '15  
 Electric furnace in the foundry. J. H. Gray. *diag Iron Age* 96:798-800, 878-81 O 7-14 '15  
 Electric furnace in the foundry. R. C. Gosrow. *Met & Chem Eng* 13:882-3 J 1 '15  
 Electric furnace in the foundry. W. L. Morrison. *Iron Tr R* 67:177-9 J 23 '15  
 Electric-furnace load as a central-station possibility. *Elec R & W Elec'n* 67:13-14 J 3 '15  
 Electric-furnace power loads; abstract. F. T. Snyder. *Elec W* 65:1527 Ja 12 '15  
 Electric furnace steels for dynamic straining. J. H. Schipper. *Il diag Automobile* 33:865-9 N 11 '15  
 Electric iron-ore smelting in Norway. *diag Elec R & W Elec'n* 67:54 J 10 '15  
 Electric muffle furnace for the determination of carbon and oxygen in steel and tungsten powder. C. M. Johnson. *Il Met & Chem Eng* 13:17 Ja '15  
 Electric pig iron in Norway; a new type of furnace using coke successfully—cost data. *diag Iron Age* 95:1120 My 20 '15  
 Electric steel. F. T. Snyder. *Il diag Iron Tr R* 65:1077-82+, 1127-30+ D 10-17 '14  
 Electric steel direct from ore fines. A. C. Dalton. *Iron Age* 96:1184-5 N 13 '15

Electric steel furnace. P. H. Berggreen. *Sibley J* 29:133 Ja '15

Electric steel furnace of new design; the Wila arc type. R. S. Wile. *Il diag Iron Age* 96:866-8 O 14 '15

Electric steel in Germany and Austria. *Met & Chem Eng* 13:398 Jo '15

Electric steel industry's present status. *Iron Ago* 95:94-8 Ja 7 '15

Electric steel-making furnaces. T. D. Robertson. *diag Inst E J* 53:533-9 Ap 1 '15; Abstract. *Elec R & W Elec'n* 66:308-9 F 13 '15; Discussion. *Inst E J* 53:539-44 Ap 1 '15

Electric steel production. *Eng & Min J* 100:224 Ag 7 '15

Electrical steel by the acid process; abstract. A. Miller. *Met & Chem Eng* 13:640 S 15 '15

Electro-metallurgical industries as possible consumers of electric power. D. A. Lyon and R. M. Keeney. *Am Inst Min E Bul* 104:1707-30 Ag '15; Excerpt. *Iron Age* 96:300-2 Ag 12 '15

Evolution of the electric furnace. K. G. Frank. *Iron Tr R* 67:901-3 N 4 '15

Feasibility of coal ash in various atmospheres. A. C. Mohner and A. B. Hall. *diag J Ind & Eng Chem* 7:404, 474-81 My-Je '15

Heat losses from an electric furnace. W. H. Wills and A. H. Schuyler. *Iron Age* 96:1052-3 N 4 '15

Heat treatment in automatic electric furnaces; with discussion. T. R. Bully. *Iron Age* 96:905-5 O 28 '15; Same cond. *Iron Tr R* 67:835, 850 O 28 '15

Heroult furnace for foundry use. *Il diag Iron Tr R* 65:976-8 My 13 '15; Same. *Foundry* 43:225-7 Jo '15

High temperature experimental furnace. W. R. Mahan. *diag Met & Chem Eng* 13:70 F '15

Improved laboratory furnace. C. M. Johnson. *Il Iron Tr R* 66:613-14 Mr 25 '15

Limitations of the electric furnace in the manufacture of steel castings. G. F. Lake. *Met & Chem Eng* 13:137-8 Mr '15

Limitations of the electric furnace in the manufacture of steel castings. G. Muntz. *Met & Chem Eng* 13:108-10 F '15

Making steel by electricity. *diag Sci Am S* 70:206-7 Mr 27 '15

Manufacture of electric steel in the Sibley furnace. V. Sibley. *Engineer* 119:616-17 Jo 18 '15; Excerpt. *Iron Age* 95:1171 My 27 '15

New nitrogen fixation furnace. *diag Eng M* 49:104-5 Ap '15

Open hearth versus the electric furnace in the manufacture of commercial steels. H. Cornell. *Met & Chem Eng* 13:630-1 S 15 '15

Power consumption of electric furnaces. W. L. Morrison. *Iron Age* 94:1402-3 D 17 '14

Progress in the iron and steel industry and the electric furnace. K. G. Frank. *Am Inst Min E Bul* 103:2547-54 O '15

Quick heating electric furnace for the determination of carbon in steel, etc., with train. C. M. Johnson. *Il J Ind & Eng Chem* 7:960 N '15

Remerfeld electric furnace. *diag Eng & Min J* 99:400-2 F 27 '15; *J Ind & Eng Chem* 7:159 F '15; *Met & Chem Eng* 13:702-3 O 1 '15

Results of electric-furnace operation in Alaska-Treadwell gold mine. *Elec R & W Elec'n* 67:987 N 27 '15

Smelting of copper ores in the electric furnace. D. A. Lyon and R. M. Keeney. *diag U S Bur Mines Bul* 81:1-70 '15

Stummans arc-furnace operation at Redondo, Cal.; abstract. W. M. McKnight. *Elec W* 65:1527 Jo 12 '15

Steel making in the electric furnace. J. H. Gray. *Iron Age* 96:1288-9 N 25 '15; Excerpt. *Met & Chem Eng* 13:650-7 O 1 '15

Thermal efficiency of the electric furnace. W. M. Johnson. *Eng Soc W Pa* 31:488-98 J 1 '15; Excerpt. *Iron Tr R* 67:491 S 9 '15; Discussion. *Eng Soc W Pa* 31:499-500 J 1 '15

Use of electricity in melting brass. H. G. Dorsey. *Il diag Iron Tr R* 67:319-30 J Ag 12 '15

See also Electric heating; Electrometallurgy

### Bibliography

Electric furnace in metallurgical work. D. A. Lyon, R. M. Keeney, and J. F. Cullen. *U S Bur Mines Bul* 77:190-207 '14



**Electric fuses**

Brooklyn company employs porcelain-clad high-tension fuses. *Ellec W* 66:350 F 6 '15  
 Controversy over refillable fuses. *Ellec W* 66:126 J1 17 '15  
 Heating on renewable fuses. *Ellec R & W Ellec'n* 67:108-9 J1 17 '15  
 High-potential pole-type cut-out. *Ellec W* 66:823-4 O 9 '15

**Electric garages.** See Garages, Electric

**Electric generators.** See Dynamos

**Electric hammers**

Operation of the Western electric hammer. *Ellec R & W Ellec'n* 67:858-9 N 6 '15

**Electric heaters**

Another electrical adjunct to the gasoline automobile. *Ellec W* 66:981 O 30 '15  
 Apol electric heaters. *Ellec & Ven* 12:56 Mr '15  
 Electric air warmers. *Ellec R & W Ellec'n* 67:142 S 4 '15  
 Electric heater for shrink fits. *Ellec R & W Ellec'n* 67:980 N 27 '15  
 Electric heater to prevent gasoline automobiles from freezing in cold garages. *Ellec R & W Ellec'n* 67:980 N 27 '15  
 Electric heating and electric heater control. *W: S. Hammond, Jr. Ellec Am Soc Heat & V* 10:20:279-93 '14  
 Light-weight all-steel panel heater. *Ellec R & W Ellec'n* 67:773 O 9 '15  
 Radiant electric heater. *Ellec W* 66:768 O 2 '15

See also Electric water heaters

**Electric heating**

Developments in electric heating for shoemaking machinery. *Ellec W* 66:816 O 9 '15  
 Electric cooking and heating in private houses; with discussion. *W. A. Elliott, Inst E* 10 J 53:42-53 D 1 '14  
 Electric heating and cooking. *P. W. Gunner, Ellec Am* 113:496 J 1 D 4 '15  
 Electric heating and electric heater control. *W: S. Hammond, Jr. Ellec Am Soc Heat & V* 10:20:279-93 '14  
 Electric heating and heat storage; abstract. *M. Semenza, Ellec R & W Ellec'n* 67:130 S 4 '15  
 Electric heating and heating appliances. *C. P. Randolph, Ellec R & W Ellec'n* 67:130 S 4 '15  
 Electric-heating appliance showroom. *Ellec W* 66:800-3 Mr 27 '15  
 Electric heating as applied to marine service. *C. S. McDowell and D. M. Mahood, Am Inst E* 10 J 53:861-72 Jc '11; Discussion. 53:1891-5 D '14  
 Electric heating in Seattle. *Ellec & Ven* 12:25-7 Ja '15  
 Electric-heating resistors; abstract. *Laeh, Ellec W* 66:76-7 J1 10 '15  
 Further developments of electric heating in Seattle. *Ellec & Ven* 12:42-3 Mr '15  
 Heating and ventilating an office building by electricity: Hydraulic power co.'s plant at Niagara Falls. *C. F. Herington, Ellec plan Heat & Ven* 12:13-22 Jc '15  
 New possibilities of electric heating and cooking brought out in meeting of British central stations. *Ellec R & W Ellec'n* 66:334 F 20 '15  
 Operating costs of electric heating devices. *Heat & Ven* 12:59 Ap '15  
 Practical aspects of electric heating. *Heat & Ven* 11:27-9 D '14  
 Sales arguments for electrically heated japanning ovens. *D. Rollins, Ellec W* 66:43-4 Ja 2 '15  
 Stockholm investigation on electric heating; abstract. *C. A. Rosander, Ellec W* 66:165 Ja 16 '15  
 Study of car-heating requirements. *Ellec R & W Ellec'n* 67:103-4 Ja 9 '15

See also Rollers -Electric heating; Electric furnaces; Electric heaters; Electric water heaters

**Electric heating association, Industrial.** See Industrial electric heating association

**Electric industries**

Business hints for dealer and contractor. *(I. D.) Crain, Jr. Ellec R & W Ellec'n* 67:824-5 Ag 21 '15  
 Copper and the electrical industry. *Ellec W* 66:1017-19 N 6 '15

Electric power industry. *D: B. Rushmore, Ellec R & W Ellec'n* 67:427-39 Jc '15  
 Electrical merchant—who will he be? *E. M. Whitehouse, Ellec W* 66:697-701 S 25 '15  
 Federal trade commission investigates the foreign market for American electrical goods. *W. Fawcett, Ellec R & W Ellec'n* 67:292-4 Ag 14 '15  
 Guaranteeing sales on a money-back basis. *W. N. Matthews, Ellec W* 66:809 Mr 27 '15  
 Interesting the non-electrical public. *F. H. Gule, Ellec W* 66:1184-6 N 27 '15  
 Place of the middleman—the Jobber. *W. R. Herstein, Ellec W* 66:1036-7 N 6 '15  
 Supplies; devices and appliances for the distribution, control and utilization of electricity. *S. H. Blake, Ellec R & W Ellec'n* 67:553-5 Jc '15  
 Thirty-five years of lamp sales. *Ellec W* 66:800-1 O 16 '15; Abstract. *Illum Engr* 8:456-7 N '15  
 Year in the electrical industry. *Ellec R & W Ellec'n* 66:6-13 Ja 2 '15

See also Electric contractors; Electric plants; Electric power; Electric service companies; Electric shops; Electric vehicle industry; Electrochemistry; Electrometallurgy; also Electrical prosperity week; National association of manufacturers of electrical supplies

**Brazil**

Electrical opportunities in Brazil. *H. N. Douthett, Ellec W* 66:1598; 66:156-7, 425-6 Jc 19, J1 17, Ag 21 '15

**Great Britain**

Development of the supply of electricity in Great Britain. *A. H. Seabrook, Ellec R & W Ellec'n* 66:761-3 Ap 24 '15  
 Electrical affairs in Great Britain during 1914. *A. H. Bridge, Ellec R & W Ellec'n* 66:13-16 Ja 2 '15  
 Electrical industry in England in 1914. *H. Harbison, Ellec W* 66:38-9, 371 Ja 2, Ap 17 '15

**India**

British India. *I' S Sp Cons Rep* 72:86-99 '15  
 Calcutta local section; chairman's address. *W. H. Everett, Inst E* 10 J 53:466-70 Mr 16 '15  
 Development of electric power for industrial purposes in India. *H. R. Speyer, Inst E* 10 J 53:597 601 Ap 15 '15

**Russia**

Electrical development in Russia. *L. W. Schmidt, Ellec W* 66:1719-20 Jc 26 '15  
 Installations, systems and appliances. *P. Gurswitsch, Ellec W* 66:1465-6 Jc 5 '15

**Siberia**

Opportunities for electrical manufacturers in Siberia. *Ellec W* 66:267 Ja 23 '15

**South America**

Electrical conditions in Buenos Aires and Argentina. *Ellec R & W Ellec'n* 66:124-6 Ja 16 '15  
 Trade opportunities in South America. *Ellec W* 64:1172-3 D 12 '14

**Switzerland**

Foreign business of the Swiss electrical industry for 1914 compared with preceding year. *Ellec W* 66:1131 N 20 '15

**United States**

American electrical industries in 1914. *T. C. Martin, Ellec W* 66:13 Ja 2 '15  
 Continued gain in light and power industry. *Ellec W* 66:456-8 Ag 28 '15  
 Electric supply company, Memphis, Tenn. *Ellec R & W Ellec'n* 66:626-7 Mr 20 '15  
 Electrical exports for May. *Ellec R & W Ellec'n* 67:180 J1 31 '15  
 Electrical industry and the war. *M. Z. Mitchell; H. M. Byllesby; H. T. Bodine, Ellec W* 66:394-9 Ag 21 '15  
 Future prospects of the electrical export business. *M. A. Chudin, Ellec W* 66:14-16 Ja 2 '15  
 How is business? comment by manufacturers. *Ellec R & W Ellec'n* 67:413-16 S 4 '15  
 Increase in alternating-current service in New York. *J. K. Becker, Ellec W* 66:568 F 27 '15

**Electric Industries—United States—Continued**

National electrical week. S. M. Kennedy. *Elec W* 65:588-9 Mr 8 '15  
 New England contractors and central-station men hold co-operative meeting. *Elec R & W Elec'n* 66:898-9 My 15 '15  
 Ohio electric light association meeting of the committee on new business co-operation. *Elec R & W Elec'n* 67:555-6 S 25 '15  
 Outlook in other industries; comment by editors of various trade publications. *Elec R & W Elec'n* 67:417-27 S 4 '15  
 Society for electrical development, annual meeting, New York, May 11. *Elec W* 65:1265-6 My 15 '15  
 Statistics in the census returns. *Elec W* 65:93 Ja 9 '15  
 Suggested national electrical week. *Elec W* 65:183, 276-8 Ja 16, 30 '15  
 Suggestion advanced for a national electrical week. *Elec R & W Elec'n* 66:170 Ja 23 '15  
 Supply manufacturers organize. *Elec W* 65:693-4 Mr 13 '15  
 Western electric company's annual electrical supply year book. *Elec R & W Elec'n* 66:42-3 Ja 2 '15

**Electric Inspection**

Electrical inspector, his work and his standard. T. H. Day. *Elec R & W Elec'n* 66:117-18 Ja 16 '15  
 Problems in electrical inspection at the Panama-Pacific International exposition. G. A. Geary. *Elec R & W Elec'n* 67:22-4 Jl 3 '15  
 Western association of electrical inspectors 10th annual meeting, Minneapolis, Minn., Jan. 26. *Elec R & W Elec'n* 66:257-61 F 6 '15

**Electric Instruments**

Electrical measuring instruments. U S Bur Stand Circ 20:1-57 '15

See also Electric apparatus and appliances; Electric measurement; Electric motors; Electric testing; Electrodynamometers

**Electric Insulation. See Insulation****Electric Irons**

Almost a ton of evidence. *Il Elec W* 66:475 Ag 28 '15  
 Automatic electric iron for window display. E. D. Burr. *Elec R & W Elec'n* 66:485 Mr 13 '15  
 Electric iron with heat intensified at point. *Il Elec W* 66:1218 N 27 '15  
 Flatiron sold every seven seconds. *Elec W* 66:200-1 Jl 24 '15

**Electric Laboratories**

Improved electrical laboratory apparatus. C. M. Johnson. *Il J Ind & Eng Chem* 7:960-1 N '15

Industrial research. L. A. Hawkins. *Il Gen Elec R* 18:416-27 Jo '15

Life-testing equipment for tungsten lamps; electrical features of the incandescent lamp-testing laboratory at Nela Park, Cleveland. *Il plan Elec W* 66:12-16 Jl 3 '15

Recent researches in electricity at the Bureau of standards. M. B. Ross. *Il plan J Fr Inst* 180:539-59 N '15

200-mile artificial transmission line. C. B. Magnusson, J. Gooderham and K. Rader. *Il diag Elec W* 65:1546-9 Jo 12 '15

Electric lamp socket appliances. See Electric apparatus and appliances

**Electric Lamps**

Arc lamps versus half-watt tungsten lamps; abstract. A. Chevalier. *Elec W* 66:75 Jl 10 '15

Arc light; the incandescent lamp. R. Weston. *J Ind & Eng Chem* 7:251-2 Mr '15

Business hints for dealer and contractor. G. D. Crain, jr. *Elec R & W Elec'n* 67:922-3 N 20 '15

Census returns on electric lamps. *Elec W* 65:343-4 F 6 '15

Cleveland lantern for ornamental lighting. W. Harrison. *Il Elec W* 66:521-4 S 4 '15

Color of illuminants; with discussion. L. A. Jones. *diag Illum Eng Soc* 9:687-709 no 8 '14

Comparative cost of magnetite-arc and nitrogen-filled tungsten street-lighting units. J. H. Loban. *Elec W* 66:109 Jl 10 '15

Edward Weston's inventions. L. H. Backeland. *por Sci Am S* 79:108-9 F 13 '15

Electric incandescent lamps. *Illum Eng'r* 7:513-14, 547-8 N-D '14

Electric lamp industry. G. F. Morrison. *Il Gen Elec R* 18:497-503 Jo '15

Experiments on the heating of screw-socket lampholders. C. C. Paterson. *Il diag Inst E R J* 53:17-21 D 1 '14

Gaseous-conductor lamp for color matching; abstracts. D. M. Moore. *diag Elec W* 66:1160 N 20 '15; *Elec R & W Elec'n* 67:949 N 20 '15; *Met & Chem Eng* 13:885 D 1 '15

Incandescent versus arc lamps. *Elec W* 65:898-9 Ap 10 '15

Incandescent versus arc lamps. H. E. Clifford. *Elec W* 65:1594-5 Je 19 '15

Indicating key socket. *Il Elec R & W Elec'n* 65:1098 D 5 '14

Moore light in Spain. *Il Illum Eng'r* 8:324-6 Jl '15

N. B. L. A. lamp committee report. *Elec W* 65:1520-1 Jo 12 '15

N. B. L. A. lamp committee report. G. F. Morrison. *Gen Elec R* 18:926-8 S '15

Neon light tubes. J. Boyer. *Il Sci Am S* 78:410 D 26 '14

Photographic value of various illuminants. *Illum Eng'r* 8:347 Ag '15

Portable electric reading lamp which the carpenter can make. B. H. Crussell. *Il diag Illdg Age* 37:45-8 D '15

Selecting lighting units on the basis of results. C. H. Clumpton. *Elec W* 65:1028-9 Ap 24 '15

Year in the electrical industry. *Elec R & W Elec'n* 66:9-10 Ja 2 '15

See also Electric lanterns; Electric light fixtures; Electric lighting; Locomotive headlights; Safety lamps, Electric; Searchlights

**Testing**

Lamp-testing instruments. *Il Elec W* 66:423 Ag 31 '15

Street-illumination tests; committee report. *Elec W* 65:1521-2 Jo 12 '15

**Electric Lamps, Arc**

Arc lamps; committee report. *Illum Eng Soc* 10:625-7 no 7 '15; *Sumo. Illum Eng'r* 8:445-6 N '15; Same cond. *Am Gas Light J* 103:274 N 1 '15

Arc-light controller for motion picture projection apparatus. *Il Sci Am* 112:272 Mr 20 '15

Arc with unconsumed electrodes; abstract. W. A. Darrall. *Il Elec W* 66:1099-1100 N 13 '15

Chemistry of flaming arc carbons. W. C. Moore. *Met & Chem Eng* 13:52-5 Ja '15; *Sumo. Sci Am S* 79:122-3 F 20 '15; Abstract, with discussion. *Elec R & W Elec'n* 66:823-4 My 1 '15

Compensate for motion-picture projectors. C. Vailford. *diag Elec R & W Elec'n* 67:230-1 Ag 7 '15

Conditions determining the candle-power and steadiness of large current arcs for searchlights. H. Ayrton. *Illum Eng'r* 8:78-81 F '15

Current supply for motion picture machines. H. R. Johnson. *Il diag Gen Elec R* 18:895-904 S '15

Development of the flame carbon. R. B. Chillum, jr. *Illum Eng Soc* 9:710-15 no 8 '14

Electric arc in vapors and gases at reduced pressures. W. A. Darrall. *Il diag Met & Chem Eng* 13:915-18 D 1 '15

Flame-arc lighting of Indianapolis streets. *Il Elec W* 66:452-3 Ag 28 '15

Installation of luminous arc lamps in Worcester. *Il Elec R & W Elec'n* 66:26-8 Ja 2 '15

Integrating sphere and arc lamp photometry; with discussion. N. K. Chaney and M. L. Clark. *Illum Eng Soc* 10:1-37 no 1 '15

Luminous arc lamp. R. B. Hussey and H. C. Rogers. *Il diag Elec R & W Elec'n* 67:399-404 S 4 '15

Modern arc lamps. C. M. Stephens. *Il diag Elec R & W Elec'n* 67:409-12 S 4 '15

Paint and dye testing; use of the white flame arc as a standard. W. R. Mott. *Sci Am S* 80:350-2 N 27 '15

Present status of arc-lamp carbons. V. A. Charko. *Il Elec R & W Elec'n* 67:406-8 S 4 '15

Rotary brush for washing arc-lamp inner globes. *plan Elec W* 66:597 S 11 '15

**Electric lamps, Arc** *Continued*

Status of arc lamp as street illuminant. *Elec W* 65:1070 Ap 24 '15

Street lighting with modern arc lamps. W. P. Hurley. *Illum Eng Soc* 10:105-6 no 5 '15

*See also* Electric lamps, Mercury vapor

**Electric lamps, Incandescent**

Another Edison anniversary. *Il Power* 42:565-6 O 19 '15

Edison and the invention of the electric incandescent lamp. *Il Elec R & W Elec'n* 67: 676-8 O 9 '15; Same abr. *Foundry* 43:404 O '15

Electric incandescent lamps. *Illum Eng'r* 7:513-14, 547-8 N-D '14

Electric incandescent lamps; committee report. *Illum Eng Soc* 10:520-5 no 7 '16; Same. *Illum Eng'r* 8:311-14 O '15; Same cond. *Am Gas Light J* 103:273-4 N 1 '15

Electric light a factor in civilization. S. B. Deane. *W Soc R J* 20:1-14; Discussion. 20: 14-26 Ja '15

Fluorescent size and intensity of projected beam. L. C. Porter. *Elec W* 65:177 JI 21 '15

Incandescent headlights and projectors. L. S. Bailey. *Il Illum Eng Soc* 10:271-80 no 3 '15

New outdoor incandescent lighting unit. *Engs Elec R & W Elec'n* 67:167 JI 24 '15

Practical rating of electric incandescent lamps; with discussion. F. W. Wilcox. *Engs Illum Eng'r* 8:163-85 Ap 13; Excerpt. *Elec W* 65:390 Ap 17 '15

Rating and designation of electric incandescent lamps; abstract of paper and discussion. E. Solomon. *Elec W* 65:1165; 66:10, 15, 137 Jo 5, JI 3-17 '15

Rating of incandescent lamps in Germany. *Elec W* 65:598 S 11 '15

Thirty-five years of lamp sales. *Elec W* 66:860-1 O 16 '16; Abstract. *Illum Eng'r* 8:456-7 N '15

Visit to some of the leading electric lamp factories near London. *Il Illum Eng'r* 7:527-38 N '14

Year's progress in methods of making and selling incandescent electric lamps. E. J. Edwards and H. B. Scott. *Elec R & W Elec'n* 66:16-18 Ja 2 '15

*See also* Audion; Electric lamps, Tungsten; Electric lighting, Incandescent; Safety lamps, Electric

**Testing**

Rack and switchboard for life tests on series incandescent lamp. *Il Engg Elec W* 65:40 Ja 2 '15

**Electric lamps, Mercury vapor**

Improved quartz mercury-vapor lamp for biological and photochemical investigations. W. T. Boye. *Il Engg Am Chem Soc J* 37: 1721-6 JI '15

Industrial lighting by mercury vapour lamps. *Il Illum Eng'r* 8:314-5 Ag '15

M-shaped tubular lamp for photographic enlarging. *Il Elec W* 66:423 Ag 21 '15; *Elec R & W Elec'n* 67:492 S 11 '15

Shop illumination by quartz lamps. *Il Ry Age (Mech ed)* 88:650 D '14

Sterilization of water by ultra-violet rays of the mercury-vapor quartz lamp. M. von Recklinghausen. *Engs Am Inst E E Pro* 32:1049-62 J '14; Same cond. *Engs M* 47:756-8 Ag '14; Discussion. *Am Inst E E Pro* 33: 1908-12 D '14

Temperature of the mercury arc. J. C. McLennan. *Sci Am S* 70:107 F 13 '15

**Electric lamps, Pocket**

Improved battery-operated lamps. *Il Elec W* 66:716 S 25 '15

Pocket lamps. *Elec W* 66:541 S 4 '15

**Electric lamps, Tungsten**

Application of the new high-efficiency tungsten lamp to photography; with discussion. M. Luckiesh. *Il Illum Eng Soc* 10:149-80 no 3 '15

Card system for obtaining life records of gas-filled lamps. *Elec W* 65:1340 My 15 '15

Changes in details of gas-filled lamps. *Elec W* 65:1110 My 1 '15

Characteristic equations of tungsten filament lamps and their application in heterochromatic photometry. C. W. Middlekauff and J. R. Skogland. *U S Bur Stand Bul* 11:483-594

My 27 '15; Abstract. *J Fr Inst* 179:97-9 Ja '15; Excerpt. *Illum Eng Soc* 9:734-68; Discussion. 9:769-74 no 8 '14

Characteristics of gas-filled lamps; with discussion. G. M. J. Mackay. *Illum Eng Soc* 9: 775-81 no 8 '14

Compensation for mazda C lamps. H. D. Brown. *diag Gen Elec R* 18:596 Jo '15

Direct-reading device for use in computing characteristics of vacuum tungsten lamps (with computing chart). J. R. Skogland. *U S Bur Stand Bul* 12:269-88 N 8 '15; Abstract. *J Fr Inst* 180:102-4 JI '15

Experience with gas-filled lamps at Brooklyn. *Il Elec W* 66:210 JI 21 '15

Experience with mazda gas-filled street lamps. C. H. Shaw. *Elec R & W Elec'n* 66:116 Mr 6 '15

Gas-filled lamp in photography. *Elec W* 65: 1154-6 My 8 '15

Gas-filled lamp studies at Boston Tech. *Elec W* 65:1571 Jo 12 '15

Gas-filled lamps. G. Cotton; E. J. Edwards. *Elec W* 65:1100-1 My 1 '15

Gas-filled lamps showing remarkable longevity at Dubuque, Ia. *Il Elec W* 65:1709-10 Jo 26 '15

Gas-filled ornamental lighting at Rockville Center, N. Y. A. L. Powell. *Il Elec W* 66: 483 Ag 28 '15

High candle-power mazda lamps for steel mill lighting. G. H. Stickney. *Il Gen Elec R* 18: 377-83 My '15

Incandescent lamps for projectors. L. C. Porter. *Il Gen Elec R* 18:371 6 My '15

Lighting of ships. L. C. Porter. *Il Gen Elec R* 18:113 6 F '15; Same. *Int Marine Eng* 20: 336-8 Ag '15

Mazda C lamps and illumination progress. H. H. Magdalen. *Elec R & W Elec'n* 67: 397-8 S 4 '15

Mazda lamp fixtures for street-lighting service. *Il Elec R & W Elec'n* 65:1191-2 D 19 '14

Melting point of tungsten; abstract. L. Langmuir. *Elec W* 66:161 Ag 28 '15

Modern street lighting with mazda lamps. H. A. Thomsen. *Il Gen Elec R* 18:659-65 JI '15

New developments in the projection of light. L. C. Porter. *Il Illum Eng Soc* 10:33-64 no 1 '15

New hundred watt gas-filled mazda lamp. *Il Elec R & W Elec'n* 66:313 F 13 '15

Nitrogen filled lamps in Chicago. *Il Elec W* 65:1173-4 My 8 '15

Nitrogen filled tungsten lamp for photographic purposes; abstract. W. Voeger. *Elec W* 65: 1116-17 My 1 '15

Nitrogen-filled tungsten lamp. *Elec W* 66: 708-9 S 25 '15

Operation of mazda C street lamps. C. H. Shaw. *Elec R & W Elec'n* 67:297 Ag 14 '15

Opportunities of illumination with gas-filled lamps. *Il Elec W* 64:1157 D 12 '14

Overheating of 200-watt nitrogen-filled lamp. E. J. Edwards. *Elec W* 65:844 Ap 3 '15

Overshooting in tungsten lamps. A. G. Worthing. *J Fr Inst* 180:178-9 O '15

Phenomena of the nitrogen-filled lamp. *diag Elec W* 61:1111-12 D 15 '14

Photometry of gas-filled incandescent lamps; with discussion. C. H. Sharp. *Il Illum Eng Soc* 9:1021-32 no 9 '14

Photometry of gas-filled lamps. D. H. Tuck. *diag Elec W* 65:78 Ja 9 '15

Photometry of the gas-filled lamp. G. W. Middlekauff and J. R. Skogland. *Elec W* 64:1248-51 D 25 '14

Present practice in the use of tungsten filament lamps for the lighting of metal working plants; with discussion. A. L. Powell and H. E. Harrington. *Il Illum Eng Soc* 9:814-38 no 8 '14

Saving of \$400,000 effected in New York city by substituting incandescent lamps for arc lamps. *Il Elec W* 66:512-13 S 4 '15

Securing business with the nitrogen lamp. W. A. Wadsworth. *Elec R & W Elec'n* 66: 194-6 Ja 30 '15

Securing increased load with nitrogen lamps at Cincinnati. *Elec W* 65:428 F 13 '15

Series transformer for gas-filled tungsten street lamps. *Il Elec R & W Elec'n* 66:58 Ja 2 '15

Simulating old illuminants. M. Luckiesh. *Elec R & W Elec'n* 67:161-3 JI 21 '15

**Electric lamps, Tungsten—Continued**

Temperature and blackening effects in helical tungsten filaments. B: M. Shackelford. J Fr Inst 180:619-21 N '15

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**Control**

Dimmers for tungsten lamps. A. E. Waller. Il Am Inst E E Pro 34:221-8 F '15; Same cond. Power 41:491 Ap 6 '15; Discussion. Am Inst E E Pro 34:2590-4 O '15  
Lamp-socket energy economizer. Il Elec R & W Elec'n 66:742-3 Ap 17 '15

**Testing**

Competitive economy test of tungsten-filament lamps. H. H. Higbie. Elec R & W Elec'n 66:1301-7 Jo 26 '15  
Integrating sphere equipped for testing gas-filled lamps. Il diag Elec W 65:120 Ja 9 '15  
Life-testing equipment for tungsten lamps; electrical features of the incandescent lamp-testing laboratory at Nela Park, Cleveland. Il plan Elec W 66:12-16 J1 3 '15

**Electric lanterns**

Electricity replacing oil in railroad hand lanterns. Il Sci Am 113:472 N 27 '15  
Redeasilite portable electric lantern. Il Elec R & W Elec'n 65:1229 D 26 '14

**Electric light. See Electric lighting**

Electric light and power association, Northwest. See Northwest electric light and power association

Electric light association, Indiana. See Indiana electric light association

Electric light association, National. See National electric light association

**Electric light carbons**

Chemistry of flaming arc carbons. W: C. Moore. Met & Chem Eng 13:52-6 Ja '15; Same. Sci Am 8 79:123-3 F 20 '15; Abstract, with discussion. Elec R & W Elec'n 66:823-4 My 1 '15

**Electric light fixtures**

Art and science in home lighting; with discussion. G: W. Cassidy. Il Illum Eng Soc 10:55-81 no 1 '15; Abstract. Elec W 65:484-6 F 20 '15

Edwards lighting fixtures. Il Elec R & W Elec'n 67:802-3 N 6 '15

Lighting the Reulbale building. F. L. Godinez. Il Arch & Bldg 47:188-90 My '15

New receptacles for semi-indirect and similar fixtures. Il Elec R & W Elec'n 67:384 Ag 28 '15

Out-door light clusters. Il Elec R & W Elec'n 67:112 J1 17 '15

Points to remember when selecting fixtures for gas-filled tungsten lamps. Elec W 66:409 Ag 21 '15

Self-contained unit for indirect and semi-indirect lighting. Il Elec W 66:1218 N 27 '15

Two new illumination fixtures. Il diag R & W 65:867 N 5 '15

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Electric light plants, Municipal. See Electric plants, Municipal

**Electric lighting**

Adjustable chart to show how seasons affect lighting bills. Elec W 66:47 Ag 28 '15

Artificial lighting of moving picture studios. W: A. D. Myers. Il Illum Eng Soc 8:284-8 Jo '15

Car electric lighting systems. R. S. McNab. R & A (Mech ed) 88:467-8 S '15

Characteristics of the three-wire generator: analysis of its behavior when used as a balancer in a direct-current lighting system. O. J. Ferguson. diag Elec W 64:1199-1204 D 19 '14

Combining the esthetic and the utilitarian in illumination. Il Elec W 66:740-1 O 2 '15

Converting night into day; what the inventor has done for oil, gas, and electricity in illumination. Il Sci Am 112:536-7 Jo 5 '15

Detroit's municipal lighting plant. T: Wilson. Il plan Power 40:833-6 D 15 '14

Developments in illumination during 1914. P. S. Millar. Elec W 65:22-4 Ja 2 '15

Effect of change of lamp voltages on vision; abstract. W: Kuerth. Elec W 66:541-2 S 4 '15

Effective illumination of streets. P. S. Millar. diag 11 pls Am Inst E E Pro 34:1379-98 J1 '15; Abstract. Elec W 66:62-4 J1 10 '15; Discussion. Am Inst E E Pro 34:3053-63 D '15

Elaborate temporary wiring installation; provisions for electric illumination of the outdoor performance of Siegfried given in the Harvard stadium at Cambridge, Mass. Il Elec W 66:474-5 Ag 28 '15

Electric light—a factor in civilization. S. E. Doane. W Soc M J 20:1-14; Discussion. 20: 14-26 Ja '15

Electric lighting data: station equipment—amount of current used for street lighting and other purposes—fuel statistics—number and kind of lamps used for street lighting—ornamental lighting—rates. Munic J 38:884-94 Jo 24 '15

Electric lighting for motion-picture studios. L. G. H. Smith. Elec W 65:1040-2 Ap 24 '15

Electric lighting of "court" and "clock" golf courses. M. R. Trimble. Il diag Elec W 66: 308 Ag 7 '15

Electric lighting of railway passenger cars. R. S. M. Macnab. R & A 57:696-9 N 27 '15

Electric sunshine in movie production in California. Il Elec W 66:136 J1 17 '15

Electrical equipment of Panama-Pacific exposition. Il diag plan Elec W 64:1241-7 D 26 '14

Electrical features of Boston custom house tower. Il Elec R & W Elec'n 67:336-7 Ag 21 '15

Heating of screw-socket lamp holders; abstract. C. C. Paterson. diag Elec W 65:532 F 27 '15

Illuminating engineering society; review of the Washington convention. J. R. Cravath. Elec W 66:738-9 O 2 '15

Illumination features of Montreal station. Il Elec W 65:331-5 F 6 '15

Illumination of the suburban house; the use of electricity or acetylene. H. L. Alt. Il diag Brickb 24:248-51 O '15

Indiana electric light association 7th annual convention. Elec R & W Elec'n 67:534-6 S 18 '15

Indiana electric light association's seventh annual convention. Elec W 66:626-7 S 18 '15

Individual electric lighting plants for steam shovels. Il Elec R & W Elec'n 66:90-1 Ja 9 '15; Iron Age 94:1396 D 17 '14; Eng & Min J 90:15 Ja 2 '15; Colliery 35:397-8 F '15

Interior wiring for lighting and power service. A. L. Cook. diag Power 41:601-5, 640-3, 666-71 My 4-18 '15

Kansas City Union station lighting. Il Elec W 65:1253-5 My 15 '15

Lighting at San Diego exposition. Il Elec W 65:805-7 Mr 27 '15

Lighting plant for tracklaying, Priesha Tipplington Kalkfontein. Uly. N. K. Pretorius. Il R & A 57:15-16 O 23 '15

Lighting the pageant of Lexington. L. C. Porter. Il plan Elec W 66:309-10 J1 24 '15

Master-switch lighting circuits. V. N. Heath. diag Elec W 65:811-13 Mr 27 '15

N. Y. L. A. convention, San Francisco, June 8-11. Elec R & W 45:1106-9 Jo 12 '15

N. Y. L. A. Iowa section, 15th annual convention, Keokuk, April 20-22. Elec R & W Elec'n 66:816-20 My 1 '15

N. Y. L. A. Michigan section, 4th annual convention. Elec R & W Elec'n 67:27-30 J1 3 '15

N. Y. L. A. report on standardizing plugs and receptacles. Elec W 66:256-7 Ja 23 '15; Same. Elec R & W Elec'n 66:245 F 6 '15

N. Y. L. A. 38th convention; abstracts of papers and reports. Elec R & W Elec'n 66:1107-13 Jo 12 '15

New step in street illumination. I. Ladoff. plan Elec R & W Elec'n 66:691-5 Ap 10 '15

Ohio electric light association 21st annual convention. Elec R & W Elec'n 67:196-200 J1 31 '15

Review of the electric lighting industry. C. W. Stone. Gen Elec R 18:439-43 Jo '15

Small lighting plants. Il Elec W 65:359 F 6 '15

Year in the electrical industry. Elec R & W Elec'n 66:9-10 Ja 2 '15

See also Electric arc; Electric distribution; Electric lamps; Electric light carbons; Electric light fixtures; Electric meters; Electric signs; Electric wire and wiring; Locomotive headlights; Photometry; Searchlights

**Electric lighting - Continued****Cost**

Comparative costs of gas and electricity for illuminating purposes. *U. S. Cash. Am Gas Light J* 102:167-71 *Mr* 15 '15  
 Cost of electric service for a town of 750. *J. D. Bowles. Elec W* 66:254 *Jl* 31 '15  
 Gas and electric street lights; comparison of cost and efficiency. *U. Muncie Eng* 49:96-8 *S* '15  
 Report of committee on piping large buildings for gas; economical comparison of gas and electric lighting operating indoors. *Am Gas Inst* *Pro* 9:pt 2, 1431-9 '11  
 Your lighting bill for 1925. *A. W. Deininger. Sci Am* *S* 80:187 *S* 18 '15

**Rates**

Art of rate-making. *A. Dow. Elec W* 65:17-18 *Ja* 2 '15  
 Central-station rate making. *P. L. Klefer. Power* 42:268-70 *Ag* 24 '15  
 Charging for energy; abstract. *Bueggeln. Elec W* 65:869 *Ap* 3 '15  
 Cincinnati franchise negotiations. *Elec W* 66:105 *Jl* 19 '15  
 Comparison of electric light and power rates. *J. C. Dickerman. Power* 42:8-16 *Jl* 6 '15  
 Decision by Oregon commission, with table of costs for different classes of consumers of the Hood River gas and electric company. *Elec W* 66:431 *Ag* 21 '15  
 Houston, Texas, has co-operative lighting franchise. *P. H. Sheehan. Muncie Eng* 48:11 *3 Ja* '15  
 Municipal electric light plants: rates. *Muncie Eng* 48:111-12 *P* '15  
 New York Edison company; opinion and order of the first district commission. *Elec R & W Elec'n* 67:802-4 *O* 30 '15  
 New York rate reduction accepted. *Elec W* 65:828 *Mr* 27 '15  
 Northwest light and water company; decision of commission. *Elec R & W Elec'n* 67:876 *7 N* 27 '15  
 Rates and rate making. *P. M. Lincoln. diag Am Inst* *10 R Pro* 34:2175-2214 *O* '15; *Abstract. Elec R & W Elec'n* 67:722 *3 O* 16 '15  
 Rates for light and power; tabulation. *Muncie J* 38:893 *Je* 24 '15  
 Simple rate system. *Elec R & W Elec'n* 67:978 *N* 27 '15  
 Westchester lighting company cases. *Elec R & W Elec'n* 66:35-6 *Ja* 2 '15

**Electric lighting, Arc**

*See also* Electric arc; Electric lamps, Arc; Electric light carbons

**Electric lighting, Decorative**

Artificial illumination, architecture and decoration. *Elec W* 66:484 *Ag* 28 '15  
 Details of Woolworth tower lighting. *U. Elec R & W Elec'n* 66:1048-9 *Je* 5 '15  
 Flood lighting of building fronts from ornamental cluster posts. *U. Elec R & W Elec'n* 67:724-5 *O* 16 '15  
 Flood lighting versus outline lighting. *U. Elec W* 66:389 *Ag* 14 '15  
 Illumination at the Panama-Pacific exposition. *U. Elec W* 66:1383-5 *My* 29 '15  
 Panama-Pacific international exposition at night; how the illuminating engineer uses light decoratively. *H. M. Wright. U. Sci Am* 112:378-9 *Ap* 24 '15

*See also* San Francisco Panama-Pacific international exposition—Lighting

**Electric lighting, Incandescent**

Carborundum shunt for series incandescent lamps; abstract. *H. Lux. Elec W* 65:803 *Mr* 6 '15  
 New York's greatest lighting spectacle: Woolworth tower. *C. W. Ferson. U. Sci Am* 112:171 *P* 20 '15  
 Nitrogen-filled lamps in Boston art museum. *U. Elec W* 66:481-2 *Ag* 28 '15  
 Street lighting practice with incandescent lamps. *C. H. Stickney. U. Muncie Eng* 48:80-8 *P* '15  
 Your lighting bill for 1925. *A. W. Deininger. Sci Am* *S* 80:187 *S* 18 '15  
*See also* Electric lamps, Incandescent; Electric lamps, Tungsten

**Electric lines**

Combined telephone and telegraph circuit for operating water-power system. *diag Elec W* 64:1258 *13* 26 '14  
 Concrete transmission-line poles. *R. D. Coombs. U. Elec W* 65:311-3 *P* 6 '15  
 Equipment for single-circuit transmission-line poles. *U. Elec W* 66:714 *S* 25 '15  
 Four years' operating experience on a high-tension transmission line. *A. Baum. diag Am Inst* *15 R Pro* 31:1125-45 *Jl* '15; *Abstract. Elec W* 66:10-11 *Jl* 3 '15  
 High voltage transmission at high altitude. *P. H. Thomas. U. diag plan Elec W* 65:20-24, 87-92 *Ja* 2-9 '15  
 Hydroelectric development on Bishop Creek. *Cal. C. O. Puck. U. Elec W* 64:1144-7 *D* 12 '14  
 Long transmission lines; comparison of the Keokuk-St. Louis and the Big Creek-Los Angeles systems. *R. A. Philip. diag Elec W* 61:1147-8 *D* 12 '11  
 N. E. L. A. committee report on underground construction. *diag Elec W* 65:1519-20 *Ja* 12 '15; *Elec R & W Elec'n* 66:1112-13 *Ja* 12 '15  
 New Chicago-Sault Ste. Marie high-tension crossing. *U. Eng N* 71:218 *9 Ag* 5 '15  
 New method of making service connections. *Elec R & W Elec'n* 67:275 *Ag* 11 '15  
 Pennsylvania overhead line crossing specifications. *Elec Ry J* 46:186 *Jl* 31 '15  
 Receiving end impedance of a conducting line loaded at both ends. *A. E. Kennedy. Elec W* 66:187 *Jl* 31 '15  
 Reinforcing metal poles. *G. H. McKelway. Elec Ry J* 46:365 *7 Ag* 28 '15  
 Report of the Engineering association committee on power distribution. *Elec Ry J* 46:718-9 *O* 9 '15  
 Sag in overhead conductors. *K. L. Wilkinson. Elec W* 65:336-7 *P* 6 '15  
 Sag tension calculations. *H. Pender. Elec W* 66:311 *5 Ag* 11 '15  
 Special structures for electric lines; how the necessity of transposing circuits, supporting switches and transformers and crossing obstructions is met. *R. D. Coombs. U. Elec W* 65:980-1 *Ap* 17 '15  
 Steel reinforced aluminum cables. *E. T. Driver and E. V. Pannell. Elec W* 66:521-6 *S* 4 '15  
 Steel tower, transmission line, construction. *A. B. Cuddehe. U. Elec W* 66:127-33 *Jl* 17 '15  
 Tower foundations for the Cribbhol-Balboa transmission line. *L. W. Dye. U. diag Eng Soc W* *19 Pro* 30:971-90 *Ja* '15; *Same. Ry R* 56:125-31 *My* 29 '15; *Same cond. Eng & Contr* 44:317-20 *O* 26 '15  
 Transmission-line construction for mountain districts. *H. M. Somerville. U. diag Elec W* 66:867-3 *O* 16 '15  
 Underground cable on the Pennsylvania railroad. *L. C. Forshoe. U. Ry Age* 59:269-71 *Ag* 13 '15  
 Underground wires on the Panama railroad. *U. Ry Age* 58:451-3 *Mr* 12 '15  
 Use of copper and iron wire on lines serving small loads. *Elec W* 66:469 *Ag* 28 '15  
 Ways of handling outgoing lines from a generating station. *U. Elec W* 66:751 *O* 2 '15  
*See also* Electric cables; Electric conduits; Electric fuses; Electric railroads; Electric service, Rural; Electric transmission; Electric wire and wiring; Telegraph; Telephone lines

**Cost**

Cost data on 6800-volt lines. *Elec W* 66:16 *Jl* 3 '15  
 Cost of constructing a short transmission line. *Elec W* 65:1244 *My* 15 '15  
 Cost of 68,000-volt transmission line. *Elec W* 65:904 *Ap* 10 '15  
 Cost of transmission lines in New England. *Elec W* 66:135 *Jl* 17 '15  
 Costs of extensions. *Elec W* 65:1191 *My* 8 '15

**Inductive Interference**

Discussion on irregular wave shapes. (*See Proceedings for June, 1915*) *Am Inst* *10 R Pro* 34:3087-3116 *D* '15  
 Report by the Joint committee on inductive interference; discussion. *Am Inst* *10 R Pro* 34:313-35 *P* '15  
 Telegraph and telephone troubles. *Engineer* 119:234 *Mr* 5 '15

**Electric lines—Continued****Maintenance and repair**

- Climbers for structural-steel poles. *Il diag Elec Ry J 46:1049 N 20 '15*  
 Replacing insulators upon live lines. *Il Elec R & W Elec'n 67:339 Ag 21 '15*  
 Speedy and inexpensive pole moving in San Francisco. S. L. Foster. *Il Elec Ry J 46: 874 O 23 '15*  
 Ways of hunting trouble on distribution systems. *Il diag Elec W 66:579-82, 638-43 S 11-18 '15*

**Protection**

- Overhead straight line and angle protective crossing clamps. *diag Elec Ry J 46:598-9 S 18 '15; Elec W 66:770 O 2 '15*  
 Protection of high-voltage lines against birds; abstract. *Il von Bernhard. Elec W 66:652 S 18 '15*  
 Protective coatings for line structure and equipment. R. D. Coombs. *Elec W 65:780 Mr 20 '15*

*See also Electric protective apparatus*

**Electric locomotives**

- Battery locomotive for track laying. *Il Engineer 119:585-6 Jo 11 '15*  
 Chicago, Milwaukee & St. Paul locomotives. A. H. Armstrong. *Il diag Gen Elec R 18: 600-3 J1 '15; Same. Elec Ry J 46:1072-4 Jo 5 '15; Same. Engineer 120:153 Ag 13 '15*  
 Crank drive in electric locomotives. J. Lincoln. *Engineer 120:287-9 S 24 '15*  
 Delivery of electric locomotives for the Chicago, Milwaukee & St. Paul. *Il diag Ry J 46:451-2 O 9 '15*  
 Double truck electric locomotive. *Il Eng & Contr 43:185-6 F 24 '15*  
 Electric locomotive; comparisons with steam locomotive as to selection and rating. A. H. Armstrong. *Il diag Am Soc M E J 37:381-8 J1 '15; Same abr. Gen Elec R 18:828-31 Ag '15; Same abr. Sci Am S 80:342-3 N 27 '15*  
 Electric locomotive design. W. Arthur. *Elec Ry J 46:1209 Jo 26 '15*  
 Electric towing at Panama. *Il diag Elec Ry J 46:235-7 Jo 30 '15*  
 Electric traction on the Norfolk & Western railway. *Il diag plans Eng N 73:1192-5 Jo 17 '15*  
 Electricity in the construction and operation of the Panama canal. R. Schildauer. *Il diag Gen Elec R 18:sup729-47 J1 '15*  
 Exhibition of St. Paul locomotives. *Il Elec Ry J 46:1030-7 N 20 '15*  
 First 3000-volt locomotive for the Chicago, Milwaukee & St. Paul railway company. R. S. Johnson. *Il Gen Elec R 18:1154-8 J1 '15*  
 Gas-electric locomotives for the San Pacho electric line. *Il diag Ry J 46:423-6 O 2 '15; Elec Ry J 46:608-70 O 2 '15; Elec R & W Elec'n 67:860-1 N 6 '15; Ry Age 59:658-60 O 8 '15; Eng N 74:782 O 2 '15*  
 Gasoline-electric locomotives. *Il Power 42:600 N 9 '15*  
 Locomotive and train cars in Detroit United freight service. C. L. Keller. *Il Elec Ry J 45:848-9 My 1 '15*  
 Mechanical features and performance of electric locomotives. A. H. Armstrong and A. F. Batchelder. *Ry Age 59:247 Ag 6 '15*  
 Mechanical problem of the electric locomotive. G. M. Eaton. *Ry Age 59:604-5 O 1 '15; Abstract. Elec Ry J 46:626 S 25 '15*  
 Mercury vapor rectifier locomotive an accomplished fact. *Il diag Elec Ry J 44:1343 J 19 '14; Same. Engineer 119:142-3 F 6 '15*  
 Modern electric mine locomotive. G. Bright. *Il Am Inst E I Pro 34:1616-20 Ag '15; Same. Colliery 35:145-6 O '15*  
 Norfolk & Western electrification, plans (supp) *Elec Ry J 45:1060-3 Jo 5 '15*  
 Pennsylvania locomotive on turntable at Panama-Pacific exposition. *Il Elec Ry J 45:287 F 20 '15*  
 Storage-battery locomotives. *Colliery 35:250-60 D '14*  
 Storage-battery locomotives. *Eng & Min J 90: 533 Mr 20 '15*  
 Three-phase Italian passenger locomotives. G. Pontecorvo. *Il diag Elec Ry J 45:283-5 F 6 '15*

- Three thousand-volt direct-current electric locomotives for the Chicago, Milwaukee & St. Paul railway. *Sci Am 118:391-4 N 6 '15*  
 Towing locomotives for the Panama canal. C. W. Larson. *Il diag Gen Elec R 18:101-17 F '15; Same cond. Eng N 73:145-7 Jo 28 '15; Ry Age 58:189-91 Jo 29 '15; Elec R & W Elec'n 66:187-91, 233-7 Jo 30-F 6 '15; Elec W 65:288-80 Jo 30 '15; Eng Rec 71:134-6 Jo 30 '15; Ry R 56:350-3 Jo 30 '15; Sci Am S 79:72-4 Jo 30 '15; Eng M 48:744-8 F '15; Int Marine Eng 20:161-2 Ap '15; Engineer 119: 323-5 Ap 2 '15*
- Underground haulage by storage-battery locomotives in the Bunker Hill & Sullivan mine. J. W. Gwinn. *Il Am Inst Min E Bul 98:230-47 F '15; Discussion. 101:1189-97 My '15*  
*See also Railroads—Electrification*

**Performance**

- Data on four years' performance, electric locomotives of the Pennsylvania R. R. *Il Ry J 67: 53-4 J1 10 '15; Same cond. Ry Age 59:513 S 17 '15*  
 Performance of Pennsylvania railroad's electric locomotives at New York terminal. *Elec R & W Elec'n 66:1314 Jo 26 '15*

**Repair**

- Electric locomotive repair shops, New York, New Haven & Hartford R. R., Van Ness, New York. *diag plans Ry R 57:363-5 S 18 '15*

**Electric machinery**

- Air cleaning apparatus for the ventilation of generators and transformers. W. Baum. *Il diag Gen Elec R 18:801-12 Ag '15*  
 Automatic electrical tools. *Il Mach 22:345-6 N '15*  
 British standardization rules. *Elec W 65:1245 My 15 '15*  
 Changing the service of direct-current machines. G. Fox. *Power 41:298-9 Mr 2 '15*  
 Classification of electromagnetic machinery. F. Creed. *diag Am Inst E I Pro 34:1399-1423 J1 '15*  
 Cost per hour of electrical machinery. L. A. Dougell. *Elec W 66:746-8 O 2 '15*  
 Machine which heats and drives rivets. *Il Iron Age 95:937-8 Ap 29 '15*  
 Maintaining high insulation resistance. H. M. McElhann. *diag Power 41:366 Mr 16 '15*  
 Physical limitations in d-c. commutating machinery. R. G. Lammie. *Am Inst E I Pro 34:1650-1614 Ag '15*  
 Practical experience in the operation of electrical machinery. J. C. Parham. *diag Gen Elec R 17:909-12, 961-3, 1193-6, 1559-9, 146-7, 217-18, 304-7, 401-4, 606-8, 861-2, 928-9, 1003-6, 1082-3, 1146-8 S(-), 1 '14-MY, J1-1 '15*  
 Reluctance of some irregular magnetic fields. J. E. H. Douglas. *diag Am Inst E I Pro 34:867-925 My '15; Discussion. 34:3078-86 D '15*  
 Shape of the pressure wave in electrical machinery. S. P. Smith and R. S. H. Boulding. *diag Inst E I J 53:205-38; Discussion. 53: 238-47, 323-5 F 1-15 '15*  
 Special electric butt-welding machines. D. T. Hamilton. *Il diag Mach 21:735-9 My '15*  
 Troubles encountered in the operation of carbon brushes in direct-current generators and motors. R. H. Martindale. *Il Am Inst E I Pro 34:373-84 Mr '15; Same cond. Power 41:558-9 Ap 20 '15; Same cond. Engineer 119:488-9 My 7 '15; Same cond. Causes of poor commutation and remedies. *Elec W 65:863-4 Ap 3 '15; Discussion. Am Inst E I Pro 34:2968-74 J1 '15**

- Year in the electrical industry. *Elec R & W Elec'n 66:10-12 Jo 2 '15*

*See also Brushes (electric machinery); Commutators; Dynamoes; Electric apparatus and appliances; Electric controllers; Electric driving; Electric engineering; Electric machines; Electric motors; Electric plants; Electric protective apparatus; Electric shovels; Electric transformers; Electricity in mining; Electricity on the farm; Rotary converters; Ship propulsion, Electric*

**Losses**

*See also Eddy-currents*

Electric machinery *Continued*

## Manufacture

Castings as electrical apparatus parts. A. B. Reynolds. *Iron Age* 94:1196-7 D 31 '14; Abstract (holding an electrical manufacturer's business). *Foundry* 43:96-7 Mr '15

Electricity in the manufacture of electrical machinery. *El Elec R & W Elec'n* 66:287-9 F 13 '15

## Testing

Separation of the no-load stray losses in a continuous-current machine by stroboscopic running-down methods. D. Robertson. *Bibliog diag Inst E E J* 53:308-22 F 15 '15

## Electric machines

Quickly constructed static machine. *El Sci Am* 113:164 Ag 21 '15

## Electric measurement

Adjustments of the Thomson bridge in the measurement of very low resistances. E. Wenner and E. Weibel. *U S Bur Stand Bul* 11:65-8 N 15 '14

Calculation of strength of electric currents when measured by Rayleigh current balance. *Elc R & W Elec'n* 67:104 S 1 '15

Calculation of the maximum force between two parallel, coaxial, circular currents. E. W. Grover. *J Fr Inst* 179:711-16 Je '15

Calibration of current transformers by means of mutual inductance. C. Portecasse. *diags pls Am Inst E E Pro* 34:1199-1216 Je '15

Cathode ray tube and its application. M. E. Trowder. *diag Gen Elc R* 18:816-29 Ag '15

Comparison of calculated and measured core loss curves. E. W. Peck, Jr. *Am Inst E E Pro* 34:169-76 F '15; Discussion. 34:2620-1 N '15

Determining the load in branch distribution circuits of direct-current systems; abstract. L. Lewin. *Elc W* 65:166-6 Ja 16 '15

Differential method for the determination of losses in coils. A. Hund. *diags Elc W* 65:1300-1 My 22 '15

Direct-reading instrument for measuring the logarithmic decrement and wave length of electromagnetic waves. E. A. Kolster. *diags U S Bur Stand Bul* 11:421-55 My 19 '15

Edward Weston's inventions. L. H. Backeland. *per Sci Am* 8 79:109 F 13 '15

Electrical constants of antennas. L. Cohen. *diag Elc W* 65:286-8 Ja 30 '15

Investigation of dielectric losses with the cathode ray tube. J. P. Minton. *El Am Inst E E Pro* 31:1115-65 Je '15

Leakage prevention by shielding, especially in potentiometer systems. W. P. White. *diags Am Chem Soc J* 36:2011-20 O '14

Measuring one-millionth of an ohm; abstract. E. H. Rayner. *Elc W* 66:763 O 2 '15

Measuring the current in a c. circuit. O. A. Knapp. *diags Elc W* 66:761-2 O 2 '15

Methods, data, and new apparatus for measuring electrical conductivity above 1500° C. of vapors at normal pressure. E. P. Northrup. *U S Fr Inst* 179:387-52 Mr '15

Methods of measuring the inductance of low-resistance standards. E. Wenner, E. Weibel and E. H. Gibson. *diags U S Bur Stand Bul* 12:11-21 O 28 '15

Phase angle of current transformers. C. L. Dawes. *Am Inst E E Pro* 34:927-40 My '15

Separation of the no-load stray losses in a continuous-current machine by stroboscopic running-down methods. D. Robertson. *Bibliog diag Inst E E J* 53:308-22 F 15 '15

Sphere gap as a means of measuring high voltage. E. W. Peck, Jr. *Am Inst E E Pro* 33:899-914 Je '14; Discussion. 34:103-24 Ja '15

Sphere gap discharge voltages at high frequencies. J. C. Clark and H. J. Ryan. *El Am Inst E E Pro* 33:937-41 Je '14; Discussion. 34:103-24 Ja '15

Ten-to-one ratio for comparing precision resistance standards. C. A. Hoxie. *El Gen Elc R* 18:916-19 S '15

Transmission line calculator. R. W. Adams. *diags Gen Elc R* 18:88-80 Ja '15

*See also* Electric meters; Electric resistance; Electric testing; Electric units; Electromotor; Galvanometers; Magnetic measurements; Voltmeters

## Electric meters

Alternating-current and direct-current instruments. *El Elec W* 66:771-2 O 2 '15

Electric vacuum motor; abstract. W. Rohn. *El diag Elc W* 64:1211 D 19 '14

Electrical measuring instruments. *U S Bur Stand Circ* 2051-67 '15

Instrument transformers arranged to serve separate-circuit and totalizing meters. *plan Elc W* 66:1692 N 13 '15

Measurements for the household. *U S Bur Stand Circ* 65:82-90 '15

Meter box to permit reading meter from outside of house. *El Elec R & W Elec'n* 65:1148-9 D 12 '14

Meter practice on rural electric-service lines. *El Elec W* 61:1110 D 5 '14

N. E. L. A. committee report on meters. *diag Elc W* 65:1630 Je 12 '15

Notes on induction meter design. W. H. Pratt. *El Gen Elc R* 18:277-81 Ap '15

Power factor indicator. J. A. Randolph. *diags Power* 40:836-8 D 15 '14

Prepayment meters in Amsterdam; abstract. W. Lalofo. *Elc W* 66:1167 N 20 '15

Prices and rate making. P. M. Lincoln. *diags Am Inst E E Pro* 31:2176-2214 O '15; Abstracts. *Elc R & W Elec'n* 67:722-3 O 16 '15; *Elc W* 66:819 O 16 '15

Reactive factor meters. *El Elec R & W Elec'n* 65:1152-3 D 12 '14; Same. *Elc Ry J* 44:1356 D 19 '14

Standard specification for electricity meters. *Engineer* 129:270-80 S 17 '15

Variable resistance to motion offered by the registering trains of electric supply meters. S. Evershed. *diags Inst E E J* 53:498-511 Ap 1 '15; Abstract. *Elc W* 65:1118-19 My 1 '15

Weston portable electrodynamic-type ammeters, voltmeters and wattmeters. *El Elec R & W Elec'n* 67:718 O 23 '15; *Met & Chem Eng* 13:819 N 1 '15

*See also* Ammeters; Ampere-hour meters; Electric measurement; Electric testing; Electrometer; Manometers; Ohmmeter; Voltmeters; Voltmeters; Watt-hour meters; Wattmeters

## Reading

Camera for reading customers' meters. *Elc W* 66:373 Ag 14 '15

## Testing

Obtaining constant potential for meter testing. *El diag Elc W* 66:693 S 25 '15

Electric mining. *See* Electricity in mining

## Electric motors

Adjustable speed single phase motor. *Elc W* 65:619-20 Mr 6 '15

Advance type single phase induction motors. *El Elec R & W Elec'n* 67:639-40 S 18 '15

Advantages of standard motor speeds. H. N. Gilbert. *Elc R & W Elec'n* 67:686 S 25 '15

Alternating and direct-current motors. A. A. Frodericks. *Power* 41:891-2 Je 29 '15

Alternating current commutator motors; abstract. M. Latour. *diags Elc W* 66:698 S 11 '15

Characteristics of direct-current motors. H. N. Gilbert. *Elc R & W Elec'n* 67:326-7 Ag 21 '15

Characteristics of electric motors involved in their application. H. H. Rushmore. *Am Inst E E Pro* 34:187-93 F '15; Abstract and discussion. *Elc W* 65:623 F 27 '15; Discussion. *Am Inst E E Pro* 34:2747-803 N '15

Classification of alternating-current motors. V. A. Fynn. *diags Am Inst E E Pro* 34:989-1000 My '15

Classification of electromagnetic machinery. E. Cready. *diags Am Inst E E Pro* 34:1289-1423 J1 '15

Core loss in series motor. T. M. Hobie. *diags Power* 41:771-2 Je 8 '15

Designing small dynamos and motors. C. F. Krauss, Jr. *diags Sci Am* 8 80:364-6 D 4 '15

Diehl polyphase squirrel-cage motors. *El Elec R & W Elec'n* 67:691 S 11 '15

Direct-current commutating-pole motors. *Elc W* 65:1267-8 My 15 '15

Direct-current motors for coal and ore bridges. R. H. McLean. *El Am Inst E E Pro* 33:1009-10 Je '14; Discussion. 33:1887-8 D 1 '14

Disconnecting induction motors; abstract. R. Ruedenberg. *Elc W* 65:1425 My 20 '15

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- Discussion on factors involved in motor application. *Am Inst E E Pro* 34:2666-746 N '15
- Discussion on fields of motor application. *Am Inst E E Pro* 34:3006-52 D '15
- Dumore sewing-machine motor. *Il Elec R & W Elec'n* 67:633 O 2 '15
- Effect of slot design on iron loss. *E. B. Millar. Elec W* 66:985-6 O 30 '15
- Electric drive for Wilcox & Gibbs sewing machine. *Il Elec R & W Elec'n* 67:992 N 27 '15; *Elec W* 66:1220 N 27 '15
- Fractional horse power motor application. *H. F. Boc. Am Inst E E Pro* 34:3013-18 D '15
- Fractional horse power motor load. *E. Lester. I Am Inst E E Pro* 34:385-96 Mr '15; Same cond. *Eng M* 49:268-71 My '15; Abstract. *Power* 41:589-90 Ap 27 '15; Discussion. *G. H. Garcelon. Am Inst E E Pro* 34:2653-5 N '15
- Guarantees on motor and generator overloads. *H. M. Phillips. Power* 42:240-1 Ag 17 '15
- Hamilton-Beach sewing-machine motor. *Il Elec R & W Elec'n* 67:773 O 23 '15
- How to determine type of motor. *F. A. Annett. diag Power* 39:696-8 My 19 '14; Same. *Sci Am S* 78:374-5 D 12 '14
- Induction motor drive for glass-blowing machines. *Il Elec W* 66:171-2 Ja 16 '15
- Induction motors and rules for wiring and fusing. *Elec R & W Elec'n* 66:257-8 F 6 '15
- Industrial alternating-current motor applications in the metallurgical and chemical industries. *II. B. Barnes. Met & Chem Eng* 13:297-303 My '15
- Installation of motors. *M. F. Arloe. diag Elec R & W Elec'n* 67:558-63 S 26 '15
- Kimble adjustable-speed single-phase motor. *Il Elec R & W Elec'n* 66:450-1 Mr 6 '15; *Mach* 21:592-4 Mr '15
- Lamp slip indicator. *F. Bedell. Elec R & W Elec'n* 66:1224 D 26 '14
- Line disturbance caused by special squirrel-cage and wound-rotor motors when starting elevators and hoists. *J. C. Lincoln. diag Am Inst E E Pro* 34:121-31 Mr '15; Abstract. *Elec W* 66:822-3 Mr 27 '15; Discussion. *Am Inst E E Pro* 34:2847-60 N '15
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- Mine motors, with special reference to electric motors. *J. Drennen. Colliery* 35:241-5 D '14
- Minneapolis a. c. motor. *Il Dom Eng* 72:351 S 18 '15
- Modern mine haulage motor. *C. W. Larson. Il Gen Elec R* 18:264-8 Ap '15
- Motors operated under modified conditions. *G. Fox. diag Power* 42:472-6 O 5 '15
- N. 12. 1. A. rules to harmonize service requirements for motors. *Elec W* 66:93 J 10 '15
- Neutral on interpole machines. *W. T. Keenan. Power* 42:412-13 S 21 '15
- Odd experiences with electrical machinery. *O. M. Ward. Power* 42:191 Ag 10 '15
- Permissible explosion-proof electric motors for mines; conditions and requirements for test and approval. *II. H. Clark. Il U S Bur Mines Tech Pa* 101:1-14 '15
- Personal recollections. *N. Tesla. Il Sci Am* 112: 537-4 Ja 5 '15
- Polyphase commutator machines and their application. *N. Shuttleworth. Inst E E* 53: 439-57; Discussion. 53:457-66 Mr 15 '15
- Polyphase induction motors with special ventilation features. *Il Elec W* 66:547-8 S 4 '15
- Protecting polyphase motors against phase failure and reversal. *Il Met & Chem Eng* 13: 703-4 O 1 '15
- Regulation start induction motor. *J. I. Hamilton. diag Am Inst E E Pro* 34:2389-420 O '15
- Rewinding direct-current motors and generators. *A. A. Fredericks. diag Power* 42:76-8, 116-18, 148-50 J 1 20-Ag 3 '15
- Rewinding motor for lower frequency. *Elec R & W Elec'n* 67:565-6 S 25 '15
- Scheme for securing 50 r.p.m. from a 220-volt, 250-r.p.m. direct-current motor. *V. A. Clarke. plan Elec W* 66:1080-1 N 13 '15
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- Small-sized dental motor for direct drive. *Il Elec W* 65:563 F 27 '15; *Elec R & W Elec'n* 66:661 Ap 3 '15
- Speed characteristics of direct-current motors. *A. M. Bennett. Power* 41:125-7 Ja 26 '15
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- Starting and operating characteristics of single-phase motors. *Elec W* 65:433-4 F 13 '15
- Starting motors. *P. M. Heidt. diag Horseless Age* 35:882-3; 36:20-1 Je 30-J 7 '15
- Stationary motors in census report. *Elec W* 66:399-400 F 13 '15
- Subdivision of power as solved by the small motor. *R. E. Barker and H. R. Johnson. Gen Elec R* 18:555-8 Je '15
- Synchronous motors for power-factor correction. *T. Schou. Elec W* 66:1138-42 N 20 '15
- Torque characteristics of direct-current motors. *A. M. Bennett. diag Power* 42:748-52 N 30 '15
- Two synchronous-motor protection schemes. *II. R. George. diag Elec W* 66:142-3 J 17 '15
- Types of fractional-horse-power motors to employ in different services; abstract. *Bernard. Elec W* 66:938 Ap 10 '15
- Variable speed alternating-current motor of the Kimble electric company, Chicago. *Il Iron Age* 95:510 Mr 4 '15
- Westinghouse factory sewing-machine motor. *Il Elec R & W Elec'n* 67:856 N 6 '15; *Elec W* 66:1048 N 6 '15
- Where electric motors can be used. *T. R. Hay. Il Eng M* 49:498-516 J 1 '15
- Why direct-current motors fail to start. *F. A. Annett. diag Power* 41:194-5, 230-2 F 9-16 '15
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**Bearings**

- Ball-bearing induction motors. *Il Power* 42:722 N 23 '15
- Ball bearings in electric motors. *Il diag Elec W* 66:658-9 S 18 '15
- Ball bearings in electric motors. *F. J. Poor. Il diag Gen Elec R* 18:631-5 J 1 '15

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- Action of phase advance in regulating power factor of an induction motor. *diag Elec W* 66:191 J 1 2- '15
- Alternating-current controllers for steel mills. *A. Simon. Il diag Am Inst E E Pro* 34:731-51 My '15; Same. *Iron Tr R* 57:477-81-4, 527-0 S 9-16 '15; Abstract. *Elec W* 66:1195-6 My 8 '15; Discussion. *Am Inst E E Pro* 34: 2896-914 N '15
- Automatic control of motors in a sewage pumping station. *L. R. Vautrot. Il diag Sib- ley J* 29:779-87 J '14
- Changing speed of three-phase induction motor. *W. L. Bankhead. diag Power* 41:583-4 Ap 27 '15
- Control for electric motors. *C. D. Knight. Gen Elec R* 18:303 Ap '15
- Direct-current motor-speed regulation by resistance in the armature circuit and the use of diverters; abstract. *T. Carter. diag Elec W* 66:934-5 O 23 '15
- Dynamic braking. *Elec R & W Elec'n* 66:300-1 F 13 '15
- Float-switch control from two points for motor-driven pump. *G. A. Schneider. diag Elec R & W Elec'n* 67:606 O 2 '15
- How one operator controlled an air-compressor motor and used it to drive a direct-current generator. *II. R. Smith. diag Elec W* 66:168 Ag 28 '15
- Method for controlling 2000-volt induction motor one mile from power house. *A. C. Lasher. diag Elec W* 66:91-2 J 10 '15
- Mill controllers. *II. E. Stratton. Am Inst E E Pro* 34:598-614 Ap '15; Same. *Iron Tr R* 56: 820-4 Ap 23 '15; Discussion. *Am Inst E E Pro* 34:2869-94 N '15
- Motor-speed control. *Power* 42:55-6 J 13 '15
- Press button control for an electric traverser. *Il Engineer* 119:436 Ap 30 '15
- Principles and systems of electric motor control. *C. D. Knight. Il diag Am Inst E E Pro* 34:2915-26 J '15



**Electric motors—Control** *Continued*

Speed regulation of induction motors; abstract, F. W. Meyers, *diag* *Elec W* 66:769-4 ( ) 2 '15

Variable-speed drives for rolling mills, K. A. Pauly, *Power* 43:527-8 ( ) 12 '15; Abstract (Two control systems for steel-mill motor drives), *diag* *Elec W* 66:866-6 ( ) 16 '15

**Noises**

Electric-motor noises, F. H. Davies, *diag* *Power* 41:372-3 *Ap* 27 '15

**Nomenclature**

What to call alternating-current motors, C. A. Adams, *Elec W* 66:339 *Ag* 14 '15

What to call alternating-current motors; discussion, V. A. Pynn; E. Rosenberg, *diag* *Elec W* 66:971-5 ( ) 30 '15

**Repair**

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**Starting**

Data on starting torque and starting currents of various motors, *Elec W* 66:1033 *N* 6 '15

Wrong field connections, E. C. Parham, *diag* *Power* 42:692-3 *N* 16 '15

**Starting devices**

Automatic starting switches for small alternating-current motors, *il* *Elec R & W* *Elec'n* 66:1007 *My* 20 '15

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Cutler-Hammer automatic starters for alternating-current motors, *il* *Elec R & W* *Elec'n* 67:686 ( ) 9 '15; *Elec W* 66:826 ( ) 9 '15

Improvised motor starter, J. G. Grant, *il* *Eng & Min J* 100:842 *N* 20 '15

Induction-motor starters, *il* *diag* *Elec W* 66:371-6 *Ag* 14 '15

Operating factory motors, S. P. Goodale, *il* *diag* *Elec W* 66:533-4 *8* 4 '15

Starters for induction motors, *il* *Elec W* 65:1203-4 *My* 8 '15

Starting small motors, A. A. Fredericka, *Power* 41:345 *Mr* 9 '15

**Starting resistance**

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Graphic geometrical progression method for starting-resistance calculation, W. P. Coors, *il* *Elec Ry J* 45:761-3 *Ap* 17 '15

Short method for calculating the starting resistance for shunt, induction, and series motors, R. W. Jones, *Gen* *Elec R* 18:131-4 *8* '15

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**Ventilation**

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Box-frame motors and the removal of armatures, H. C. Prather, *Elec Ry J* 46:915 *O* 30 '15

Brush-holder practice for single-phase motors, R. R. Potter, *il* *diag* *Elec Ry J* 46:408-9 *8* 4 '15

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Effects of incorrect starting resistances, J. W. Corning, *Elec Ry J* 45:364-4 *Ja* 9 '15

Effects of short circuited field coils ground and puncture tests, F. J. Foote, *diag* *Elec Ry J* 44:1396 *7* *O* 26 '14

Effects of variation in car wheel diameters on motors, A. S. Landsdorf, *Elec Ry J* 44:1344 *O* 19 '14

Experiences with field control, H. M. Lloyd, *Elec Ry J* 46:131 *Ja* 31 '15

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Maximum of railway motors; abstract, R. E. Hellmund, *Elec W* 66:188 *Ja* 24 '15

C15-74 motor and 14-2 control, *il* *Elec Ry J* 45:1121-5 *Ja* 12 '15

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Graphic geometrical progression method for starting-resistance calculation, W. P. Coors, *il* *Elec Ry J* 45:761 *3* *Ap* 17 '15

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 Railway motor characteristic curves. E. E. Kimball. *Il Gen Elec R 18:206-9 Ap '15*  
 Railway motor commutation and flushing. R. E. Hellmund. *Elec Ry J 46:105-6 JI 17 '15*  
 Railway motor gearing. W. L. Allen. *Elec Ry J 45:1201-3; 46:111-12 Je 26, JI 17 '15*  
 Regenerative braking. F. J. Sprague. *Elec Ry J 45:1076-7 Je 5 '15*  
 Rejuvenating overloaded motors. W. P. Jackson. *Il Elec Ry J 46:192-3 JI 31 '15*  
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 Types of motor axle bearings—use of different types for each half. *Elec Ry J 45:760 Ap 17 '15*  
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- Advantages and limitations of railway motor ventilation. R. E. Hellmund. *Il Elec Ry J 45:833-5, 937 My 1, 15 '15*  
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 Self-ventilated railway motors. R. D. Priest. *Elec Ry J 45:891-3 My 8 '15*  
 Simple ventilating scheme for increasing motor output. R. H. Parsons. *diag Elec Ry J 45:1170 Je 19 '15*

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 Electric oven gives remarkable results in Toronto bakery. *Elec R & W Elec'n 66:480 Mr 13 '15*  
 Electrically heated enameling ovens. C. W. Bartlett. *Il Gen Elec R 18:1130-5 D '15*  
 Electrically heated jappanning ovens. C. F. Hirschfeld and W. D. Dygert. *Il Elec W 66:930-2 O 23 '15*  
 Gas vs. electrically heated ovens. G. H. Trout. *Iron Tr R 57:526-4 S 16 '15*  
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 6000-kw electric enamel loading. *Il plan Elec W 65:1702-3 Je 20 '15*  
 Thermal-insulation tests of electric ovens. A. E. Kennolly, F. D. Rverett, and A. A. Prior. *diag Elec W 65:779-82 Mr 27 '15*  
 Using electric ovens for enameling. *Il Iron Tr R 57:215 JI 29 '15*

**Electric plants**

- British Portland cement making machinery; cement works at Abertaw. *Il Engineer 119:448-9 My 7 '15*  
 Central generating system for University of Michigan. *Il plans Elec W 65:646-51 Mr 13 '15*  
 City and state power plants at Columbus, Ohio. T. Wilson. *Il Power 42:322-5 S 7 '15*  
 Detroit flour-mill plant. T. Wilson. *Il plan Power 40:870-3 D 22 '14*  
 Electrical plant of the Wakefield iron co., Wakefield, Mich. H. I. Pearl and J. Green. *Il plan Eng & Min J 100:349-51 Ag 23 '15*  
 Electricity in malting houses: relative merits of isolated-plant and central-station service. *Il Elec R & W Elec'n 65:1123-5 D 12 '14*  
 Equipment of large publishing house; power plant, interior wiring and special features of the Curtis publishing company's building, Independence square, Philadelphia. *Il diag plans Elec W 65:905-11 Ap 10 '15*  
 Gas-tractor power plant. C. V. Hull. *Il plan Power 41:226-8 F 16 '15*  
 Isolated power-house for factories. W. E. Francis. *Il Gen Elec R 18:1057-65 N '15*  
 Kansas City terminal power plant. *Il Elec W 65:1468-70 Je 5 '15*  
 Keeping down peaks on power purchased on a peak basis. T. E. Tynes. *Il diag Am Inst E Pro 33:1021-6 Je '14; Discussion. 34:79-84 Ja '15*  
 Life of building power plants. C. M. Ripley. *Sci Am S 77:120-1 F 28 '14; Same. Am Soc Heat & V 20:98-105 '14; Same cond. (How long can a private electric plant run before it has to be replaced?) Am Inst Arch J 2:94-7 F '14; Discussion. Am Soc Heat & V 20:106-11 '14*  
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 Motor-driven plant of the Dallas news. A. C. Scott. *Il plan Elec W 65:462-5 F 20 '15*  
 N. E. L. A. committee report on prime movers. *Elec W 65:1512-13 Je 12 '15; Elec R & W Elec'n 66:1111 Je 12 '15*  
 Operating data in connection with federal buildings under control of the Treasury department. N. S. Thompson. *Heat & Ven 12:13-17 JI; 17-20 Ag '15*  
 Operating features of a small plant; details of power-plant layout, operating conditions, condensing arrangements and motor service. *Il diag Elec W 65:355-7 Ag 14 '15*  
 Power plant of the Acme tea company. *Il plans Power 40:906-10 D 29 '14*  
 Power plant of the government printing office. D. H. Tuck. *diag plan Power 41:576-80 Ap 27 '15*  
 Power plant testing. W. M. Selvey. *diag Engineer 118:555-6 D 11 '14*  
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 Problems in power-plant design. (Engineers' study course) C. L. Hubbard. *diag Power 40:580-1, 618-20, 655-6, 692-4, 724-6, 754-60, 790-2, 820-2, 856-60, 894-7, 931-2; 41:32-4, 66-8 O 20 '14-Ja 12 '15*  
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 Small aero-electric plant. R. H. Williamson, Jr. *Il Sci Am 113:200-1 S 4 '15*  
 Small isolated plant pays big dividends. T. Wilson. *Il Power 41:51-4 Ja 12 '15*  
 Storage batteries for handling peak loads. M. Brown. *Power 41:470-1 Ap 6 '15*  
 Utilization of waste heat for the generation of electrical energy. H. Holman. *diag Inst. E M J 53:844-8 Je 15 '15*  
 Watt turbo-generator on elevator load in the Lumber exchange building, Chicago. *Il diag Power 42:717-20 N 23 '15*  
 Western newspaper union plant in Chicago. T. Wilson. *Il plan Power 41:2-5 Ja 5 '15*  
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- Addition to the Westport power plant. W. O. Rogers. *Il plan Power 41:390-5 Mr 23 '15*

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Auxiliary station for transmission system; turbine of Mount Holly steam station of the Southern power company operates as synchronous motor when not under load. C. A. Mees. *Il plans Elec W* 65:774-8 *Mr* 27 '15

Brunots Island generating station. F. Thlenhant, Jr. *Il dings plan Elec W* 65:1289-97 *My* 22 '15

Building a power station upon one in service. *Il diag plan Elec W* 65:965-7 *O* 30 '15

Catastrophic reserve for central stations. H. S. Cooper. *Elec W* 65:1228 *My* 15 '15

Central-station development at Portland, Maine. *Il dings map Elec W* 65:519-22, 590-6 *F* 27-*Mr* 6 '15

Central-station systems of India. *Elec W* 65:542 *S* 4 '15

Combination electric heating plant, Laramie, Wyo. A. M. Anderson. *Il Power* 42:602-5 *N* 2 '15

Comoros creek power plant, Detroit. C. F. Hirschfeld. *Il dings plans Power* 42:388-96 *S* 14 '15; Same cond. *Am Soc M* 19 *J* 37:499-508 *S* '15

Cumberland Edison power plant, W. O. Rogers. *Il plans Power* 42:704-9 *N* 23 '15

Delray power plants. N. G. Reulecker. *Il plans Power* 42:386-90, 343-4, 414-15, 435-6 *Ag* 31, *S* 7, 21-28 '15

Development of the central-station industry in Iowa. H. W. Wagner. *Il Elec R & W Elec'n* 65:757-61 *Ap* 24 '15

Developments in steam-electric generating stations. J. Hunter. *Power* 40:897-9 *D* 22 '14

Diesel-engine central station at Winchester, Ind.—cost of equipment. T. Wilson. *Il Power* 41:662-4 *Ap* 27 '15

Diesel-engine installation at Palo Alto. H. Haas. *Il Power* 41:502-4 *Ap* 13 '15

Economic selection of prime movers. R. Traut-schold. *Power* 42:511-13 *O* 12 '15

Electric service for small city. J. P. Howles. *Elec R & W Elec'n* 65:1052-3 *Ja* 5 '15

Electric service in and near Peoria, Ill. *Il map Elec W* 65:281-5 *Ja* 30 '15

Electrical year in Canada. A. Sullivan. *Elec W* 65:7-8 *Ja* 2 '15

Electrification of the Elkhorn grade, Norfolk & Western Ry. *Il Ry* 11:57:101-6 *Jl* 24 '15

Enlarging a steam reserve station; problems involved in rehabilitating the Consolidated gas, electric light & power company's West-port station. J. C. Lathrop. *Il dings Elec W* 65:1181-8 *My* 8 '15

Extension of the Cox plant. W. O. Rogers. *Il plan dings Power* 41:358-64 *Mr* 16 '15

Fort Wayne station rebuilt. T. Wilson. *Il plans Power* 42:534-9 *O* 19 '15

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Harrisburg, Ill., railway and power plant. T. Wilson. *Il diag Power* 41:898-701 *My* 25 '15

Havana consolidated power plant. C. W. Becker. *Il dings Power* 42:218-22, 267-61 *Ag* 17-24 '15

Havana—new power station. C. W. Becker. *Il dings Elec Ry* 45:920-5 *My* 15 '15; Same; with table of electrical equipment. *Elec W* 65:1233-40 *My* 15 '15; Abstract. T. C. Thibright. *Shiley J* 30:3-10 *O* '15

Interconnected electric service in Iowa. *Il map Elec W* 65:150-6 *Ja* 16 '15

Linking up the London electric supply stations. Engineer 120:16-17 *Jl* 2 '15

Lowellville, Ohio, turbine plant. W. O. Rogers. *Il dings Power* 42:138-42 *Ag* 3 '15

Metropolitan needs and sizes of prime movers. *Il Elec W* 65:799-801 *O* 9 '15

Milestones of electrical progress, a review of the Chicago central-station situation. H. In-sull. *Elec W* 65:737 *O* 2 '15

Mining lands for central stations. W. Hykes and G. Bright. *Colliery* 35:477-9 *Ap* '15

Municipal-utility problem at Kimporia, Kan.; a central station leased to a progressive syndicate. *Il Elec W* 65:1106-7 *My* 1 '15

N. E. L. A. New England section 7th annual convention. *Elec R & W Elec'n* 67:577-83 *S* 25 '15

Netherlands; extracts from the official report of commission. H. Verhagen. *Elec W* 65:599 *S* 11 '15

New England central stations and the war. H. T. Sands. *Elec W* 65:7 *Ja* 3 '15

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Oil-burning stand-by plants. C. H. Delany. *Power* 42:172-5 *Ag* 3 '15; Abstract. *Elec W* 65:1511 *Je* 12 '15

Oil engine for off-peak load. L. H. Morris. *Power* 41:351-2 *Mr* 9 '15

Oswego, N. Y., light and power plant. C. New-ell. *Il plan Power* 42:757-8 *N* 30 '15

Outlook for central stations in Pacific north-west. O. H. Caldwell. *Elec W* 65:9 *Ja* 2 '15

Outputs of large generating systems. *Elec W* 65:826-7 *Mr* 27 '15

Power plant at Kincaid, Ill. T. Wilson. *Il dings plans Power* 42:430-4 *S* 28 '15

Power plant of the Hughes electric co. C. P. Larsen. *Il Power* 41:732-5 *Je* 1 '15

Projected new power station for Manchester. Engineer 119:235 *6* *Mr* 5 '15

Proposed Manchester generating station. S. L. Pearce. *Elec R & W Elec'n* 67:672-3 *O* 9 '15

Recent developments in steam-electric gener-ating stations. J. Hunter. *Am Soc M* 19 *J* 37:223 *5* *Ap* '15

Single-unit power plants. J. C. Hawkins. *Power* 41:855 *6* *Je* 22 '15

Small electric generating stations; applica-bility of oil engines for plants in small towns. G. C. Shand. *Il plan Elec W* 65:923-5 *Ap* 16 '15

Springfield (Ohio) railway power plant rebuilt without interfering with operation. *Il dings plan Elec Ry* 45:898-902 *O* 30 '15

Storage battery for electric plants. J. E. Springer. *Il Munic J* 37:915-17 *D* 24 '14

System of the Columbus railway and light co. *Il Power* 42:338-41 *S* 7 '15

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Well designed central station at Durand, Ill. *Il plan Elec R & W Elec'n* 65:942-4 *Ap* 3 '15

Why the manufacturer prefers to use central-station power. H. H. Holding. *Elec W* 65:1231-2 *My* 15 '15

Wood Green electric generating station. *Il En-gineer* 119:468 *5* *My* 21 '15

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Central station investment to serve electric-range load. *Elec W* 65:708 *S* 25 '15

Costs of electrical equipment. *Elec W* 64:1204 *D* 19 '14

Economics of electric power station design. H. F. Parrshall. *Elec W* 65:690 *S* 25 '15

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Central-station rate making. P. J. Klefer. *Power* 42:264-70 *Ag* 24 '15

Load-factor, output and cost; abstract. C. A. Inker. *Elec W* 65:220 *Jl* 3 '15

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Combined operation of steam and hydraulic power in the Pennsylvania water and power company system. J. A. Wallis. *Am Inst E E* *Pro* 34:2299-2306 *O* '15

Convenient operating reports for steam plants. *Elec W* 65:1623-6 *Ja* 10 '15

Electric vehicle situation in New England and other commercial subjects discussed at N. E. L. A. convention. *Elec W* 65:805-5 *Mr* 27 '15

Experiences of small-plant operator; econo-mies effected by high-efficiency oil engine unit. E. B. Pollister. *Il Elec W* 65:1185-6 *My* 3 '15

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- Ice-making as a by-product of central stations. H. Cochran. II diag. Am Soc M E J 37:369-74 J1 '15
- Load dispatching on large generating and distributing systems discussed before A. L. E. H.; abstracts. P. Kent. Elec R & W Elec'n 67:767-8 O 23 '15; Elec W 66:904 O 23 '15
- Load dispatching system of the Columbus railway, power and light company. H. W. Clapp. II Gen Elec R 17:912-14 S '14
- Log sheets at Delray station. N. G. Reinecker. Power 42:482-4 O 5 '15
- Management of central stations. W. N. Polakov. Eng M 50:52-8, 367-72 O, D '15
- Practical operation of central stations. Elec W 65:786-7 Mr 27 '15
- Purchased power for the steel mill; economic advantages of central station current. C. S. Lankton. Iron Tr R 57:573-5 S 23 '15
- Residential load characteristics. Elec R & W Elec'n 66:946 My 22 '15
- Selling current on a small margin; a small water and steam plant. T. Wilson. II diag. Power 42:498-501 O 12 '15
- Supervising 840 miles of lines; how the load dispatcher of the San Joaquin (Cal.) system adjusts even plant water supply. L. J. Moore. II map Elec W 65:1422-4 My 20 '15
- Supplemental power for hydroelectric systems. J. F. Vaughan. Am Inst J E Pro 34:2307-19 O '15
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- Electric lighting data; station equipment—amount of current used for street lighting and other purposes—fuel statistics—number and kind of lamps used for street lighting—ornamental lighting—rates. Munic J 38:884-94 Je 24 '15
- Facts and factors of California. Elec R & W Elec'n 66:1028 Je 5 '15
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- Industrial improvement reflected; central-station gains in output of electrical energy for January and February. Elec W 65:1242-4 My 15 '15
- Interconnected systems serving San Francisco; details of the generating equipments and transmitting circuits. II diag. map Elec W 65:1350-82 My 20 '15
- Iowa central-station facts and factors. Elec W 65:1128-9 My 1 '15
- Massachusetts electric companies show decided gains. Elec R & W Elec'n 67:604 O 2 '15

- Operating data and costs for Coffeyville, Kansas plant serving city of 15,000. Elec W 66:886-7 O 16 '15
- Operating expenses of Massachusetts steam stations. Elec W 66:302-3 Ag 7 '15
- Stability in the central-station industry. F. Nicholas. Elec W 66:572-4 S 11 '15
- Steady increase in light and power operations. Elec W 66:1025-7 N 6 '15
- Substantial growth in the central-station field. Elec W 66:748-50 O 2 '15

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**Electric plants, Municipal**

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- City and state power plants at Columbus, Ohio. T: Wilson. *Il Power* 42:322-3 S 7 '15
- Cleveland municipal electric costs near estimate. *Eng N* 74:859 ( ) 28 '15
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- Columbus municipal plant earns profits. *Elec W* 66:179 J1 24 '15
- Columbus, Ohio—decision for municipal light plant. *Power* 41:354-5 Mr 9 '15
- Cost of combination electric service; investigation at Calgary, Alberta. *Elec W* 65:1181-3 My 8 '15
- Danville's municipal power plant. *Il Munic J* 38:876-7 Jo 24 '15
- Data on municipal-plant operation in Oklahoma. *Elec W* 65:1673-4 Jo 12 '15
- Derby electricity undertaking. *Elec W* 66:250 J1 31 '15
- Design and operation of the Cleveland municipal electric light plant; abstracts, with discussion. R: W. Ballard. *Il diag's Am Soc M* 70 J 37:104-11 P '15; *Power* 41:104-5 Ja 19 '15; Abstract of discussion. *Elec W* 64:1189-40 D 12 '14
- Detroit's municipal lighting plant. T: Wilson. *Il plan Power* 40:822-5 D 15 '14
- Electric light plant of South Norwalk, Conn. *Il Munic Eng* 49:137-40 ( ) '15

- Engineering features of Cleveland station. *Il Elec W* 65:1619-22 Jo 19 '15
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- Extracts from annual report of the municipal plant of Shanghai. T: H. U. Aldridge. *Elec W* 66:298 Ag 7 '15
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- Load-factor, output and cost; abstract. C. A. Baker. *Elec W* 66:20 J1 3 '15
- Massachusetts municipal electric plants. *Elec R & W Elec'n* 67:905 N 13 '15
- Municipal electric light plants: rates. *Munic Eng* 48:111-12 P '15
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- Municipal operation in Pasadena, Cal.; analysis and review of annual reports. *Elec W* 66:1171-3 My 8 '15
- Municipal water and light plant of Kansas City, Kansas. P. W. Morgan. *Il Munic Eng* 48:234-5 My '15
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- Opekauskas' municipal lighting plant. A. C. Jones. *Il Power* 41:41-3 Ja 12 '15
- Sale of current to municipally owned distributing systems by central stations. W. R. Collier. *Elec R & W Elec'n* 67:890-3 N 13 '15
- Seattle municipal lighting plant. W. L. Kildeson. *Il plans Power* 41:182-5 P 9 '15
- Steam-generating methods. Cleveland municipal plant. A. B. Williams. *Il Power* 41:631-3 My 11 '15
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- Centrifugal pump from standpoint of central station. T. D. Rose. *Il Elec R & W Elec'n* 67:7-12 J1 3 '15
- Development of electric power for industrial purposes in India. H. R. Speyer. *Inst E* 65:697-604 Ap 16 '15
- Distribution of power in electric generating stations; census reports. A. A. Potter and W. A. Buck. *Elec W* 65:995-6 Ap 17 '15
- Electric-furnace power units; abstract. F. T. Snyder. *Elec W* 65:1527 Jo 12 '15
- Electric power industry. D: H. Rushmore. *Il map Gen Elec R* 18:427-39 Jo '15
- Electricity in grain elevators. H. E. Stafford. *Il diag's Am Inst E* 15 Pro 31:1087-1103 Jo '15; Abstract. *Elec W* 66:90 J1 10 '15
- Electricity in manufacturing. *Power* 40:901-2 D 22 '14
- Features of central station power. R. Chewcrown. *Iron Tr* 11 67:583-1 S 23 '15
- Government as a buyer of power. A. P. Connor. *Power* 41:634 My 11 '15
- Industrial applications of electricity. A. R. Bush. *Il Gen Elec R* 18:460-82 Jo '15
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- Power reel for cars, trucks, etc. R. H. Parsons. *diag's Elec Ry J* 45:894-5 My 8 '15

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Art of rate-making. A. Dow. Elec W 65:17-18 Ja 2 '15

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Central-station rate making. H: D. Jackson. Power 42:526 N 2 '15

Central-station rate making. P. J. Klefer. Power 42:268-70 Ag 24 '15

Charge for surplus power. H. G. D. Nutting. Elec W 64:1208 D 19 '14

Charging for energy; abstract. Buergelin. Elec W 65:859 Ap 3 '15

Class rates for light and power systems or territories. F. G. Baum. Am Inst 19 19 Pro 34:485-505 Ap '15; Abstract. Elec W 66:67 J1 10 '15

Combined flat rate and meter rate; abstract. F. Pungl. Elec W 65:788-9 Mr 27 '15

Comparison of electric light and power rates. J. C. Dickerman. Power 42:8-15 J1 6 '15

Computation of a rate. Power 41:419-20 Mr 23 '15

Development of the supply of electricity in Great Britain. A. H. Seabrook. Elec R & W 130c'n 66:761-2 Ap 24 '15

Factors in rate-making. A. S. Ives. Elec W 65:655-7, 783-6, 987-9 Mr 13, 27, Ap 17 '15

Government furnishes cheap electricity in southern Idaho. H. B. Wulker. Power 41:228-9 F 10 '15

Hood River gas and electric company rate decision. Elec R & W 130c'n 67:191-2 J1 31 '15

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Indianapolis electric rate cases. Elec R & W 130c'n 67:235-7 Ag 7 '15

Marlborough electric company; rate decision. Elec R & W 130c'n 66:1063-4 Jo 5 '15

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Merchants heat and light company, Indianapolis; decision of commission. Elec R & W 130c'n 67:287-8 Ag 14 '15

Multiplex cost and rate system. O. B. Goldman. Am Inst 19 19 Pro 34:341-57 My '15; Discussion. 34:2002-5 N '15

N. Y. L. A. committee report on rate research. Elec W 65:1627-8 Jo 13 '15

New rate schedule at Sioux City, Iowa. Elec R & W 130c'n 67:323 Ag 21 '15

New rates of New York Edison company. Elec W 65:1159-60 My 8 '15

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Northwest light and water company; decision of commission. Elec R & W 130c'n 67:976-7 N 27 '15

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Power-factor as element of rates. F. Ghilardi. Elec W 66:410-11 Ag 21 '15

Railway power rates in Chicago. Elec Ry J 46:138 J1 24 '15

Rate discrimination in Massachusetts. H: D. Jackson. Power 41:549-50 Ap 20 '15

Rates and by-products. J. R. Cravath. Elec W 65:1039 Ap 24 '15

Rates and rate making. P. M. Lincoln. diags Am Inst 19 19 Pro 34:2175-2214 O '15; Abstract. Elec R & W 130c'n 67:722-3 O 16 '15

Rates for light and power; tabulation. Munic J 38:393 Je 24 '15

Reasons for different rates. Power 41:550-1, 684-5 Ap 20, My 18 '15

Reasons for different rates. C: R. Seed. Power 41:383 Mr 16 '15

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Rhineland (Wia.) power company. Elec R & W 130c'n 66:588-9 Mr 27 '15

Service rates and power-factor. Elec W 66:1209 N 27 '15

Simplified rate schedule of Springfield, Mass., company. Elec R & W 130c'n 67:753 O 23 '15

Tariff in China (central station). L. Schmidt-Harms. Elec W 66:138 J1 17 '15

Tendencies in central-station rate-making. F: Nicholas. Elec W 66:907-9 O 23 '15

Theories of electric current rate schedules. H: D. Jackson. Eng M 48:728-31 F '15

Uniform electric rates based on costs. H: D. Jackson. Elec W 66:50, 236-7 J1 10, 31 '15

Uniform electric rates based on costs. W: Adams. Elec W 66:666-7; 66:124-5 Je 26, J1 17 '15

Value of the service in rate-making. H. H. Holding. Elec W 65:1031-2 Ap 24 '15

Waterloo municipal waterworks and electric light plant. Elec R & W 130c'n 66:77-8 Ja 9 '15

Electric power, Sale of. See Electric service companies

Electric power distribution. See Electric distribution; Electric transmission

Electric precipitation

Abstracts of papers on electrical precipitation presented before the American Institute of electrical engineers. Elec R & W 130c'n 66:393-4 F 27 '15; Elec W 65:527 F 27 '15; Met & Chem Eng 13:160 Mr '15

Condensing silver-refinery fumes by Cottrell process. C: H. Aldrich. Eng & Min J 100:681 O 23 '15

Electrical precipitation of dust. Iron Age 95: 449-50 F 25 '15

Electrical precipitation of suspended matter. Mach 21:770 My '15; Same. Sci Am S 80: 263 O 23 '15

Electrical precipitation: theory of the removal of suspended matter from fluids. W. W. Strong. Am Inst 19 19 Pro 34:229-36 F '15; Discussion. 34:2646-52 N '15

Electrical process for detarring gas. F. W. Steers. Il diag Met & Chem Eng 12:775-8 D '14; Same. Am Gas Inst Pro 9:pt 1, 178-89

'14; Same cond. Eng N 73:1007 N 19 '14; Same cond. Eng M 48:736-9 F '15; Discussion. Am Gas Inst Pro 9:pt 1, 189-99 '14

Gas volume and dust concentration determination in connection with the Cottrell process. W: N. Drew. diags Am Soc M 10 J 37: 676-8 D '15

Historical sketch. F. G. Cottrell. Am Inst 19 19 Pro 34:625-34 Ap '15

Metallurgical smoke. C: H. Fulton. diags U S Bur Mines Bul 84:59-65 '15

Practical applications of electrical precipitation and progress of the research corporation. L. Bradley. bibliog Il Am Inst 19 19 Pro 34:523-65 Ap '15; Abstract. Eng M 49: 426-7 Jo '15; Discussion. Am Inst 19 19 Pro 34:2646-52 N '15

Preventing smoke electrically. H. C. Wolf. Il Elec W 66:602-3 S 25 '15

Solution of smoke, fume and dust problems by electrical precipitation. L. Bradley. Met & Chem Eng 13:911-14 D 1 '15

Theoretical and experimental consideration of electrical precipitation. A. F. Newbit. Il diags Am Inst 19 19 Pro 34:507-22 Ap '15; Discussion. 34:2646-52 N '15

Treatment of silver-furnace fumes by the Cottrell process; abstract with discussion. C. H. Aldrich. Elec R & W 130c'n 67:526-7 O 2 '15

Electric propulsion of ships. See Ship propulsion, Electric

**Electric protective apparatus**

- Apparatus for protecting against surges. *Il Elec W 66:421-2 Ag 21 '15*
- Automatic protective switchgear for alternating-current systems. E. B. Wiedmore. *diags Inst E E J 53:157-68 Ja 15 '15*; Same cond. Engineer 119:236-7, 268 Mr 5-12 '15; Abstract. *Elec R & W Elec'n 66:28 Ja 2 '15*; Discussion. *Inst E E J 53:169-83, 374-86, 605-8 Ja 15, Mr 1, Ap 15 '15*
- Balance systems of protection; abstract. C. C. Garrard. *diag Elec W 65:1634 Je 26 '15*
- Control and protection of electric systems. C. P. Steinmetz. *J Er Inst 180:1-16 Jl '15*; Same. *Gen Elec R 18:887-94 S '15*; Same cond. *Power 43:176-7 Ag 3 '15*; Same cond. *Sci Am S 80:202-3 S 25 '15*
- Discussion on reactance by American Institute of electrical engineers. *Am Inst E E Pro 34:1309-22 Je '15*
- Dostal dropout. *Il diag Elec R & W Elec'n 67:634 O 2 '15*
- Explosion-proof apparatus. W. Baum. *Am Inst E E Pro 34:2680-6 N '15*
- Feeder protective system. *Il diags Elec W 66:991-2 Ap 17 '15*
- Four years' operating experience on a high-tension transmission line. A. Bang. *diags pls Am Inst E E Pro 34:1440-5 Jl '15*; Abstract. *Elec W 66:11 Jl 3 '15*
- Fused transformer cut-out. *diag Elec W 66:772 O 2 '15*
- High-capacity pole-type cutout. *Il Elec R & W Elec'n 67:631-2 O 2 '15*
- High voltage arrester for telephone lines. E. P. Peck. *Il Gen Elec R 18:189-94 Mr '15*
- High-voltage, high-capacity cutout. *Il Elec R & W Elec'n 66:510-11 Mr 13 '15*
- Low-gravity cutout for storage battery. W. E. Dixon. *diag Power 41:720 My 25 '15*
- Metropolitan inclosed service switch and meter-protecting device. *Il Elec R & W Elec'n 66:129 Ja 16 '15*
- Palmer inclosed service switch and meter-protecting device. *Il Elec R & W Elec'n 66:270-1 F 6 '15*
- Proper construction of earth connections. G. H. Rettew. *Gen Elec R 18:904-7 S '15*; Abstract. *Engineer 120:482 N 12 '15*
- Protecting linemen when using telephone circuits paralleling transmission lines. *Il Elec W 66:812 O 9 '15*
- Protecting synchronous converters. plan *Power 42:171-2 Ag 3 '15*
- Protection against over-pressure. *Elec W 65:74-5 Ja 9 '15*
- Protection and control of industrial electric power. C. P. Steinmetz. *Il Gen Elec R 18:878-86 O '15*
- Protection of direct-current generators. *diags Elec R & W Elec'n 67:617-19 S 13 '15*
- Protection of high-tension circuits against dangerously high voltages; abstract. K. Edgcombe. *diags Elec W 66:94 Ja 9 '15*
- Protective apparatus for alternating-current tie lines. *Il Elec W 66:602 S 11 '15*
- Protective reactance coils. *Il diags Elec W 65:945-9 Ap 10 '15*
- Relay for protecting single a. c. tie lines. *Il diag Elec Ry J 45:599-600 S 13 '15*
- Safety-first features of electrical construction. N. G. Meade. *diags Elec R & W Elec'n 66:764-6 Ap 24 '15*
- Subway-type high-tension oil fuse cutouts. *Il diag Elec R & W Elec'n 66:700-1 Ap 10 '15*
- Theoretical investigation of electric transmission systems under short circuit conditions. I. W. Gross. *Am Inst E E Pro 34:35-69 Ja '15*; Abstract. with discussion. *Elec W 65:163-4 Ja 16 '15*; Discussion. *Am Inst E E Pro 34:2851-68 N '15*
- Trouble near wireless stations. *Elec R & W Elec'n 67:900 N 13 '15*
- 2500-volt primary cut-out box. *Il Elec W 66:996 O 30 '15*
- Two synchronous-motor protection schemes. E. E. George. *diags Elec W 66:142-3 Jl 17 '15*

*See also* Electric circuit breakers; Electric engineering—Safety devices and measures; Electric fuses; Lightning arresters

**Electric radiators**

- Experiments on the heating of screw-socket lampholders. C. C. Paterson. *Il diags Inst E E J 53:14-17 D 1 '14*
- Lee electric radiators. *Il Elec R & W Elec'n 67:990-1 N 27 '15*
- Mantel-type electric radiators. *Il Elec R & W Elec'n 66:315 F 13 '15*

**Electric railroads**

- Annual convention of C. E. R. A., Indianapolis, Ind., Feb. 25-26. *Elec Ry J 45:411-13, 455-61 F 27-Mr 6 '15*
- C. E. R. A. November meeting. *Elec Ry J 45:1038-9, 1075-80 N 20-27 '15*
- Convention of Pennsylvania association. *Elec Ry J 44:1293-9 D 12 '14*
- Graphic method for speed-time and distance-time curves. E. C. Woodruff. *Am Inst E E Pro 33:1689-92 N '14*; Discussion. *Am Inst E E Pro 34:2804-46 N '15*; Abstract. *Elec Ry J 44:1155-6 N 21 '14*
- Illinois electric railway association discuss economies in power consumption, feeder-tap protection and care of commutators, and one-man cars. *Elec Ry J 45:626-8 Mr 27 '15*
- The industry and the association. C. L. Allen. *Elec Ry J 46:701-4 O 9 '15*; Excerpt (Steam railway sentiment from an electric railway source) *Ry R 67:484-5 O 16 '15*
- New York electric railway association 33d annual convention, June 29-30. *Elec Ry J 46:14-20 Jl 3 '15*
- Recent electrical progress. *Engineer 119:11-12 Ja 1 '15*
- Recommendations of Interstate commerce commission and parts of report of general interest to electric railways. *Elec Ry J 44:1358-9 D 19 '14*
- Review of electric railways. W. B. Potter and G. H. Hill. *Il Gen Elec R 18:444-53 Je '15*
- Seven years of operating experience of a single-phase interurban railway; Chicago, Lake Shore & South Bend railway. *Il map Elec Ry J 46:940-5 N 6 '15*
- Starting resistance of electric cars. F. E. Wynne. *Elec Ry J 46:401-2 S 4 '15*
- Train resistance of electric cars at starting. D. D. Ewing. *Elec Ry J 46:279-80, 637 Ag 14, S 25 '15*
- 20th quarterly meeting of N. Y. E. R. A. at Lake George, March 2-3. *Elec Ry J 45:464-7 Mr 6 '15*
- See also* Car houses; Cars; Electric lines; Electric locomotives; Electric motors, Railway; Elevated railroads; Interurban railroads; Railroads—Electrification; Street cars; Street railroads; Subways; Suspended railways

**Accounting**

- American electric railway association; Accountants' papers and proceedings. *Elec Ry J 46:738-44 O 9 '15*
- Analyzing the balance sheet. L. T. Hixson. *Elec Ry J 45:1112-13 Je 12 '15*
- Annual meeting of C. E. R. A. accountants. *Elec Ry J 44:1334-7 D 19 '14*
- Banner year in accounting progress. *Elec Ry J 45:9-10 Ja 2 '15*
- Central electric railway accountants' association 27th meeting. *Elec Ry J 45:1151-4 Je 19 '15*
- Electric railway accounting review. P. V. Burlington. *Elec Ry J 46:720-1 O 9 '15*
- Importance of accrued accounts. J. F. Forbes. *Elec Ry J 46:809-10 O 16 '15*
- Simple work-order system. M. W. Glover. *Elec Ry J 46:441-2 S 11 '15*
- Timekeeping and cost records for way department. S. Gausmann. *Elec Ry J 45:596-3 S 18 '15*
- Value of railway statistics. G. B. Willcutt. *Elec Ry J 46:705-7 O 9 '15*
- Way records. E. P. Roundey. *Elec Ry J 45:945-6 My 15 '15*
- Way records on cost per section basis. F. W. Hulett. *Elec Ry J 45:669-71 Ap 3 '15*
- Who should keep way department time? *Elec Ry J 46:635-6 S 25 '15*

**Advertising**

- Advertising car in Boston. *Il Elec Ry J 46:149 Jl 24 '15*

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## Baggage

Is the handling of free baggage a traffic error?  
C: J. Laney. Elec Ry J 46:412-13 F 27 '15

## Coasting

Ampere-hour meters on the Annapolis short line. Elec Ry J 45:722-3 Ap 10 '15  
Coasting; Denver tramway gave experience with coasting clocks, showing resulting energy economy. H. P. Fligg. Elec Ry J 45:705-6 Ap 10 '15  
Coasting recorders in New York. Il Elec Ry J 45:572-5 Mr 20 '15  
Coasting records of Northern Texas traction company. Il Elec Ry J 45:1198-1200 Je 20 '15  
Reduction in power cost effected by the use of coasting recorders. W. R. Alberger. Elec Ry J 46:520-1 S 18 '15  
Relation between car operation and power consumption. J. F. Layng. Gen Elec R 18:973-6 O '15  
Scientific coasting at Oakland. Il Elec Ry J 46:268-71 Ag 14 '15  
Use of coasting recorders results in economies at Vancouver. W. G. Murrin. Il Elec Ry J 46:573-4 S 18 '15

## Construction

Catenary construction of New York, Westchester and Boston railway. S. Withington. Il diags plans J Fr Inst 178:705-42 D '14  
Construction, maintenance and cost of overhead contact systems; catenary construction. F. Zogbaum. Am Inst E E Pro 34:1267-81 Je '15; Abstract. Elec Ry J 46:56-7 J 10 '15  
Contact conductors and collectors for electric railways. C. J. Hixson. Il diags Am Inst E E Pro 34:1477-90 Ag '15; Abstract. Elec Ry J 46:60-1 J 10 '15  
Contact system of the Butte, Anaconda & Pacific railway. J. B. Cox. Il diags map Am Inst E E Pro 34:1447-76 Ag '15; Same. Gen Elec R 18:842-59 Ag '15  
Dead-ending feeders to metal poles. G. H. McKelway. Il Elec Ry J 45:143-4 Ja 16 '15  
Discussion on contact systems for electric railroads. (See Proceedings for June and August, 1915) Am Inst E E Pro 34:3068-77 D '15  
Double trolley system in Seattle. H. J. Kennedy. Il Elec Ry J 45:128-9 Ja 16 '15  
Electric traction on the Norfolk & Western railway. Il Eng N 73:1238-43 Je 24 '15  
Electrification of 440.5 miles of the St. Paul. Il map Ry Age 59:883-9 O 15 '15  
Electrolysis mitigation. Am Gas Light J 103:129-30 Ag 30 '15  
Electrolysis mitigation. Am Gas Light J 103:268 O 25 '15  
Electrolysis mitigation in Springfield and New Ellryia, Ohio. Elec R & W Elec'n 67:435 S 4 '15  
High-voltage third-rail construction. A. H. Tracy. diags Elec Ry J 45:469-70 Mr 6 '15  
Michigan railway—first 2400-volt third-rail line is built. Il Eng Rec 72:40-1 J 10 '15  
Michigan railway's 2400-volt, third-rail line. Il diags map. Elec Ry J 45:1144-9 Je 19 '15; Abstract. Eng M 49:753 Ag '15  
New heavy electric railroad opened in Michigan. diags Eng N 74:218-13 J 29 '15  
Overhead contact systems, construction and costs. El. J. Amberg. pls Am Inst E E Pro 34:1255-66 Je '15; Abstract. Elec Ry J 46:56 J 10 '15  
Overhead electrolysis and porcelain strain insulators. S. L. Foster. Il Am Inst E E Pro 34:1549-58 Ag '15; Abstract. Elec Ry J 46:582-3 S 18 '15  
Pennsylvania electrification at Philadelphia. Il Elec R & W Elec'n 67:923-8 N 20 '15  
Pennsylvania inaugurates electric service in Philadelphia. Il diag Eng Rec 72:590-3 N 18 '15  
Pennsylvania R. R. electrification at Philadelphia. Il map Ry Age 59:889-94 N 12 '15  
Pennsylvania R. R. electrifies Philadelphia district. Il map Eng N 74:980-3 N 11 '15  
Pennsylvania R. R.—Philadelphia-Paoli electrification. Il diags Elec Ry J 46:980-9 N 13 '15

Pennsylvania railroad's suburban line at Philadelphia electrification. Il diags map Ry R 57:611-19 N 13 '15  
Progress on the Chicago, Milwaukee & St. Paul electrification. Il Elec R & W Elec'n 67:769-71 O 23 '15; Elec Ry J 46:794-8 O 16 '15; Eng Rec 72:518 O 23 '15; Ry R 57:556-8 O 30 '15; Power 42:645-6 N 9 '15  
Railway return circuits. F. V. Skelly. Elec Ry J 45:794-5 Ap 24 '15  
San Francisco-Oakland terminal railways' way standards. G. H. Binkley. Il Elec Ry J 46:522-6 S 18 '15  
Third rail and trolley system of the West Jersey and seashore railroad. J. V. B. Duer. Il diags Am Inst E E Pro 34:1237-53 Je '15  
Top contact unprotected conductor rail for 600 volt traction systems. C. H. Jones. Il Am Inst E E Pro 34:1283-93 Je '15; Abstract. Elec Ry J 46:65-6 J 10 '15  
2400-volt railway of the Bethlehem-Chile iron mines company. E. E. Kimball. Gen Elec R 18:12-14 Ja '15  
Vienna-Pressburg single-phase railway. E. E. Seefehner. Il Elec Ry J 46:828-31 My 1 '15  
See also Electric railroads—Wiring; Poles, Concrete; Railroads—Electrification

## Control

Equipment defects—control apparatus and connections. C. W. Squier. Elec Ry J 44:1107-8, 1167-8, 1207-8, 1260-1, 1307, 1353-4, 1395-6 N 14-D 26 '14  
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Equipment defects—hand-operated controllers—contacts, fingers, springs and bases. C. W. Squier. Il diags Elec Ry J 45:102-3, 140-2 Ja 9-16 '15  
Experiences with field control. H. M. Lloyd. Elec Ry J 46:191 J 31 '15  
New cars of Seattle municipal railway. H. J. Kennedy. Il diag Elec Ry J 44:1234-6 D 12 '14  
New York municipal car—motors, control, conduit and collectors. Il diags Elec Ry J 45:496-503 Mr 13 '15  
Relay setting to maintain uniform acceleration. P. V. See. Elec Ry J 45:761 Ap 17 '15  
Resawing old controller segments to smaller size. F. A. Miller. Il diags Elec Ry J 46:236 Ag 7 '15  
Sprague-General electric PC control. C. J. Axtell. Il plan Gen Elec R 18:985-90 O '15

## Cost of construction

Conditions affecting the success of main line electrification. W. S. Murray. Il Am Inst E E Pro 34:1873-99; Tables. 1906-8; Discussion. 1913-32 Ag '15  
Contact system of the Butte, Anaconda & Pacific railway. J. B. Cox. Il diags map Am Inst E E Pro 34:1447-76 Ag '15; Same. Gen Elec R 18:842-59 Ag '15; Abstract. Elec Ry J 46:59-60 J 10 '15  
Contact system of the Southern Pacific company Portland division. P. Lehenbaum. Il diags map Am Inst E E Pro 34:1295-1308 Je '15; Abstract. Elec Ry J 46:57-8 J 10 '15  
Overhead contact systems, construction and costs. El. J. Amberg. pls Am Inst E E Pro 34:1255-66 Je '15

## Cost of equipment

Equipment cost data. Elec Ry J 45:427 F 27 '15

## Cost of maintenance and operation

Conditions affecting the success of main line electrification. W. S. Murray. Il Am Inst E E Pro 34:1873-99; Tables. 1900-4, 1909-11; Discussion. 1913-32 Ag '15  
Construction, maintenance and cost of overhead contact systems; catenary construction. F. Zogbaum. Am Inst E E Pro 44:1267-81 Je '15



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- Contact system of the Butte, Anaconda & Pacific railway. J. B. Cox. 11 diags map 4 Am Inst E E Pro 34:1447-76 Ag '15; Same. Gen Elec R 18:842-59 Ag '15; Abstract. Elec Ry J 46:59-60 JI 10 '15
- Economies in operating small cars. J. F. Layng. Gen Elec R 18:790-5 Ag '15
- Jitney problem; operating economies made possible by the use of light cars. J. C. Thirlwall. Gen Elec R 18:606-14 JI '15
- Maintenance costs on the New York Central. E. B. Katté. Elec Ry J 45:580-1 Mr 20 '15
- Maintenance costs—reducing handling of equipment and departmental co-operation. H. A. Leonhauser. Elec Ry J 45:884-6 F 20 '15
- New Haven operating results. Elec Ry J 46:101-2 JI 17 '15
- New Haven operating results. W. S. Murray. Elec Ry J 45:229-31 Ja 30 '15
- Operating costs and shifts in service. F. W. Doolittle. Elec Ry J 46:400 S 4 '15
- Reducing the operating ratio. Elec Ry J 44:1840 D 19 '14
- St. Clair tunnel electrification operating data. Elec Ry J 46:1084-5 N 27 '15
- Third rail and trolley system of the West Jersey and seashore railroad. J. V. B. Duer. 11 diags Am Inst E E Pro 34:1237-53 Je '15; Abstract. Elec Ry J 46:58-9 JI 10 '15

**Crossings**

- Highway-crossing protection; abstract of report of block signal committee of the Illinois electric railways association. 11 Elec Ry J 45:174-9 Ja 23 '15
- Practical views of special work—the crossing. R. P. Williams. diags Elec Ry J 46:678-80 O 3 '15
- Shockless railroad crossing. 11 diags Elec Ry J 45:994-6 My 22 '15

**Development work**

- Relation of railways to agriculture. P. Shoup. Elec Ry J 46:807-9 O 16 '15

**Employees**

- B. R. T. mechanical department. Elec Ry J 46:826-7 O 16 '15
- Chicago elevated first-aid system. H. E. Fisher. 11 map Elec Ry J 46:480-4 S 11 '15
- Chicago elevated medical methods. H. E. Fisher. 11 Elec Ry J 45:1192-5 Je 26 '15
- Employment bureau. H. G. Winsor. Elec Ry J 46:9-10 JI 3 '15
- Examining the physique of Chicago elevated employees. H. E. Fisher. 11 Elec Ry J 46:216-19 Ag 7 '15
- Graded wage scale. W. J. Sherwood. Elec Ry J 46:912 O 30 '15
- Human element in electric railway operation. H. C. DeCamp. Elec Ry J 45:1157-8 Je 19 '15
- Instruction and handling of employees at Hampton, Va. 11 Elec Ry J 46:230-1 Ag 7 '15
- Joliet, Ill., arbitration decision rendered. Elec Ry J 46:1008 N 13 '15
- Maintaining proper relations between a railway and its car men. G. H. Harris. 11 Elec Ry J 46:581-2 S 18 '15
- Neglected principle of the safety first movement; proper selection of trainmen. C. J. Franklin. Elec Ry J 44:1244-6 D 5 '14
- Results obtained by instruction department, New York state railways, Rochester lines. G. Lawson. Elec Ry J 45:367-9 F 20 '15

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**Equipment and supplies**

- Change of trolley wheel design and trolley lubrication. W. P. Jackson. diags Elec Ry J 46:449 S 11 '15
- Chemical department of the Illinois traction system. N. R. Beagle. Elec Ry J 45:423 F 27 '15
- Chemical engineering on the Bay State street railway. Elec Ry J 45:90-2 Ja 9 '15
- Discussion on depreciation of equipment. Elec Ry J 44:1335-7 D 19 '14
- Equipment defects—control apparatus and connections. C. W. Squier. Elec Ry J 44:1107-8, 1187-8, 1207-8, 1260-1, 1307, 1353-4, 1395-6 N 14-D 26 '14

- Equipment defects—controller blow-out coils. C. W. Squier. diags Elec Ry J 45:591-2, 636-7, 677-8 Mr 20-A 3 '15
- Equipment defects—controller drums, shafts and handles. C. W. Squier. diags Elec Ry J 45:242-4 Ja 30 '15
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- Equipment defects—hand-operated controllers—contacts, fingers, springs and bases. C. W. Squier. 11 diags Elec Ry J 45:102-3, 140-2 Ja 9-16 '15
- Exhibits at Panama-Pacific exposition. Elec Ry J 45:519-20 Mr 13 '15
- Experience with malleable iron cross-arms on wooden poles. diags Elec Ry J 45:297 F 6 '15
- Flexible running track scraper. 11 Elec Ry J 46:961 N 6 '15
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- Harps and wheels of high current-carrying capacity. 11 Elec Ry J 46:920 O 30 '15
- High-voltage direct-current railway equipments. Elec Ry J 45:13 Ja 2 '15
- Latest developments in railway equipment. W. R. Stinemetz. Elec Ry J 44:1296-7 D 12 '14
- Memphis maintenance co-operation. Elec Ry J 45:721-2 Ap 10 '15
- Modern crane trolley. 11 Elec Ry J 44:1400 D 26 '14; Ry Age (Mech ed) 89:97-8 F '15
- New trolley base and headlight. 11 Elec Ry J 45:1082 Je 6 '15
- New type of catenary hanger. W. H. Crevis-ton. 11 Elec Ry J 46:154 JI 24 '15
- Non-arc harp and oil-less bushing. 11 Elec Ry J 45:474 Mr 6 '15
- Portable car testing set. D. D. Ewing. plan Elec Ry J 46:152 JI 24 '15
- Portable lamp bank for equipment tests. F. L. Hinman. 11 Elec Ry J 45:513 Mr 13 '15
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- Report of the Engineering association committee on equipment. Elec Ry J 46:749-50 O 9 '15
- Roller-bearing trolley wheels. 11 Elec Ry J 45:996-7 My 22 '15
- Sale of scrap metals. B. J. Yungbluth. Elec Ry J 45:381 F 20 '15
- Sales of scrap metals. J. P. Alexander. Elec Ry J 45:192-3 Ja 23 '15
- Selection of railway equipment. J. F. Layng. Gen Elec R 18:126-31 F '15
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- Sleeving shrunk on worn armature shafts—rethreading pinion-end threads. diags Elec Ry J 45:720-1 Ap 10 '15
- Split self-lubricating trolley harp. C. M. Feist. 11 Elec Ry J 46:409 S 4 '15
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- Tri-city railway bearing practice. J. Sutherland. 11 Elec Ry J 45:944-5 My 15 '15
- Trolley wheels of 10-in. diameter. F. A. Miller. 11 Elec Ry J 46:278-9 Ag 14 '15
- Trolley wire and pantograph shoe wear on Annapolis short line. D. E. Crouse. 11 Elec Ry J 46:638-9 S 25 '15
- Wheel press for pressing pantograph shoes and testing springs and hose. R. R. Potter. 11 Elec Ry J 44:1267-8 D 5 '14
- Where classifying scrap paid; Fort Wayne & Northern Indiana traction co.'s tests. A. W. Redderson. Elec Ry J 46:957-8 N 6 '15

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- Another Massachusetts fare increase; 6-cent fare to the Norfolk & Bristol street railway. map Elec Ry J 46:354-5 Ag 28 '15

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 Copper zones for Shore line electric railway. Elec Ry J 46:443-5 S 11 '15  
 New Bedford & Onset fare hearing. Elec Ry J 45:969 My 15 '15  
 Six-cent fare granted to the New Bedford & Onset street railway. map Elec Ry J 46:628-31 S 25 '15

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Electric railway earnings. Elec Ry J 46:106 J1 17 '15  
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 Northern electric plan completed. Elec Ry J 46:886 O 23 '15  
 Receiverships and foreclosure sales in 1914. Elec Ry J 45:19 Ja 2 '15  
*See also* Electric railroads—Accounting; also New York railways

**Freight**

Businesslike methods in handling freight by electric railroads. J. McMillan. II Elec Ry J 46:482-7 S 18 '15  
 Car-load freight on small lines. J. S. Clark. Elec Ry J 45:1114 Je 12 '15  
 Electric freight service at Bangor. II Elec Ry J 44:1228-30 D 19 '14  
 Electric railway freight in Maine. C. H. Nottage. II Elec Ry J 45:1213-14 Je 26 '15  
 Locomotive and trail cars in Detroit United freight service. C. L. Keller. II Elec Ry J 45:848-9 My 1 '15  
 Package freight on interurban cars. J. F. Stratton. Elec Ry J 46:1078-9 N 27 '15  
 Rapid handling of auto bodies on the Detroit United railway. N. Rumney. II Elec Ry J 44:1333 D 19 '14  
 Report of the A. E. R. A. committee on express and freight traffic. Elec Ry J 46:762-4 O 9 '15

**Law**

Electric railway legal decisions. Elec Ry J 46:196-8 J1 31 '15

**Maintenance and repair**

Car maintenance on a definite cost basis. K. C. Schluss. Elec Ry J 46:568-9 S 18 '15  
 Charges for repairs to foreign equipment. Elec Ry J 46:1079-80 N 27 '15  
 Chicago elevated shop practice. II diag Elec Ry J 45:551-5 Mr 20 '15  
 Deferred maintenance. C. H. Fuller. Elec Ry J 45:791-3 Ap 24 '15  
 Departmental work planning system at Portland, Ore. F. P. Malze. II Elec Ry J 46:565-7 S 18 '15  
 From a.c. to d.c. in the night. II diag Elec Ry J 45:542-50 Mr 20 '15  
 Graphics in maintenance work. Elec Ry J 46:947-51 N 6 '15  
 Maintenance of a 1200-volt catenary on Southern Pacific lines. J. B. Nichols. II Elec Ry J 46:542-3 S 18 '15  
 Maintenance of 1500-volt d. c. cars by the Southern Pacific company. E. Sears. II Elec Ry J 46:551-4 S 18 '15  
 Maintenance of 1200-volt d. c. cars by the Southern Pacific company. R. E. Hewitt. II Elec Ry J 46:546-8 S 18 '15  
 Maintenance of 1200-volt d. c. cars by the Oregon electric railway. D. I. Clough. II Elec Ry J 46:555-6 S 18 '15  
 Memphis maintenance co-operation. Elec Ry J 46:721-2 Ap 10 '15  
 Signal maintenance methods on the New York, Westchester & Boston Ry. II Elec Ry J 45:561-5 Mr 20 '15  
 Signal maintenance on the 1200-volt Oregon electric railway. E. R. Cunningham. II Elec Ry J 46:557-8 S 18 '15  
 Way department rule book to promote standard practice. Elec Ry J 45:89 Ja 9 '15  
 Way records on cost per section basis. F. W. Eulett. Elec Ry J 45:669-71 Ap 3 '15  
 What constitutes good and sufficient maintenance? J. P. Barnes. Elec Ry J 45:467 Mr 6 '15  
*See also* Cars—Repair; Electric railroads—Cost of maintenance; Electric railroads—Equipment and supplies; Electric railroads—Shops

**Management**

Bay State way organization. Elec Ry J 46:229 Ag 7 '15  
 Car maintenance on the San Francisco-Oakland terminal railways. G. St. Pierre. II diag Elec Ry J 46:527-30 S 18 '15  
 Graphs, charts and statistics as aids to administration. E. C. Stothart. Elec Ry J 46:665-7 O 2 '15  
 How Bay State railway maintains 2751 vehicles with 680 men. Elec Ry J 46:671-2 O 2 '15  
 Lancaster's experience with time-inspection system. R. B. Hull. Elec Ry J 46:1034-5 N 20 '15  
 Maintenance costs—reducing handling of equipment and departmental co-operation. H. A. Leonhauser. Elec Ry J 45:384-6 F 20 '15  
 Methods of increasing revenue. G. K. Jeffries. Elec Ry J 46:1039 N 20 '15  
 99.2 per cent of Westchester trains are on time. Elec Ry J 46:190 J1 31 '15  
 One-man car. J. M. Bosbury. Elec Ry J 46:627 Mr 27 '15  
 Power station organization on Bay State street railway. Elec Ry J 46:911 O 30 '15  
 Watch standards. A. J. Boardman. Elec Ry J 46:874-5 O 23 '15  
*See also* Electric railroads—Coasting; Electric railroads—Medical departments; Electric railroads—Records; Street railroads—Management

**Medical departments**

Chicago elevated medical methods. H. E. Fisher. II map Elec Ry J 46:1192-5; 46:216-19, 430-4 Je 26, Ag 7, S 11 '15

**Meters**

Ampere-hour meters on the Annapolis short line. Elec Ry J 45:722-3 Ap 10 '15  
 Meter results on Chicago & Milwaukee line. II diag Elec Ry J 45:973-6 My 22 '15  
 Saving power by watt-meter records. Elec Ry J 46:822-3 O 16 '15  
*See also* Electric railroads—Coasting

**Power**

Direct-current 5,000-volt railway operation. diag Power 42:652 N 9 '15  
 Economies in electric railway power equipment. Elec R & W Elec'n 66:216 Ja 30 '15  
 Economies in operating small cars. J. F. Layng. Elec Ry J 45:979-80 My 22 '15  
 Economies in power consumption in electric railways. N. W. Storer. W Soc E J 20:205-22 Mr '15; Same cond. (Saving energy in car propulsion.) Elec Ry J 45:286-9 F 6 '15; Discussion. W Soc E J 20:223-31 Mr '15  
 First 5000-volt d. c. railway. J. G. Pertsch. Sibley J 30:72 N '15  
 5000-volt direct-current railway. diag map Engineer 120:440-1 N 5 '15  
 5000-volt experimental line of the Michigan United traction company. C. Renshaw. II diag map Ry R 57:533-6 O 23 '15  
 Inertia effect of moving electric trains. J. McAnnix. Elec Ry J 45:714-15 Ap 10 '15  
 Mountain railway electrification. F. Castiglioni. Elec Ry J 46:358-60 O 23 '15  
 New York Interborough power plant enlargement. II diag Elec Ry J 45:744-9 Ap 17 '15; Same. Elec W 65:975-9 Ap 17 '15  
 Operating with 5000-volt direct current. N. W. Storer. II diag map Elec Ry J 46:660-3 O 2 '15  
 Power consumption of railway motors. H. L. Andrews and J. C. Thirwall. II Gen Elec R 18:944-51 O '15  
 Power dispatching. G. L. Fitch. Elec Ry J 46:470-1 Mr 6 '15  
 Power distribution on Penn. R. R. at Philadelphia. II plan Power 42:685-6 N 16 '15  
 Power economy expert obtains results for the elevated railroads of Chicago. Elec Ry J 46:391 S 4 '15  
 Power supply of the public service railway. Elec Ry J 45:1023-3 My 29 '15  
 Promoting service. J. G. Montgomery. Elec R & W Elec'n 66:169 Ja 23 '15  
 Railway power rates in Chicago. Elec Ry J 46:138 J1 24 '15

**Electric railroads—Power—Continued**

- Regenerating electric ore railroad. Eng M 49: 121-2 Ap '15  
 Relation between car operation and power consumption. J. F. Layng. Gen Elec R 18: 973-8 O '15  
 Resale of energy by customer to second central station. Elec W 66:704-5 S 25 '15  
 Small car versus the large car. D. C. Hershberger. Elec Ry J 46:394-5 S 4 '15  
 Storage batteries for handling peak loads. E. Brown. Power 41:470-1 Ap 6 '15  
 System of the Columbus railway and light co. II Power 42:339-41 S 7 '15

*See also* Electric plants—Central stations; Electric railroads—Coasting; Electric railroads—Meters; Electric railroads—Substations

**Public relations**

- Code of principles. O. T. Crosby. Elec Ry J 45:370-3 F 20 '15  
 Code of principles. T. S. Williams. Elec Ry J 45:220-2. Discussion. G. E. Tripp; M. C. Brush. 45:214-16 Ja 30 '15  
 Code of principles and publicity. C. L. S. Tingley. Elec Ry J 44:1245-6 D 19 '14  
 Electric railways and the public. E. R. Johnson. Elec Ry J 44:1297-8 D 12 '14  
 How a railway helps the farmer to produce bigger and better crops. H. A. Hinshaw. Elec Ry J 46:559 S 13 '15  
 Poisoning the wells: objection to the Code of principles by the "New republic." Elec Ry J 44:1230 D 5 '14  
 Relation of railways to agriculture. P. Shoup. Elec Ry J 46:807-9 O 16 '15  
 Utilizing the county fair in publicity work. W. H. Boyce. II Elec Ry J 46:945-6 N 6 '15  
*See also* Electric railroads and state

**Records**

- Car record and trouble board combined. Elec Ry J 46:378 O 23 '15  
 Card records of Los Angeles track work. G. E. Campbell. Elec Ry J 46:407-8 S 4 '15  
 Coasting; Denver tramway gave experience with coasting clocks, showing resulting energy economy. H. P. Fligg. Elec Ry J 45: 705-6 Ap 10 '15  
 Coasting recorders in New York. II Elec Ry J 45:572-5 Mr 20 '15  
 Coasting records of Northern Texas traction company. II Elec Ry J 45:1198-1200 Je 26 '15  
 Daily work-train report. T. W. Blinn. Elec Ry J 46:536 S 25 '15  
 Following up watt-hour meter records at El Paso. II Elec Ry J 46:12-13 Jl 3 '15  
 Graphics in maintenance work. Elec Ry J 46: 947-51 N 6 '15  
 Indexing car equipment data. H. S. Cooper. Elec Ry J 46:1040-1 N 20 '15  
 Indexing car equipment data. N. Litchfield. Elec Ry J 46:877-8 O 2 '15  
 Meter results on Chicago & Milwaukee line. II diag Elec Ry J 45:973-6 My 22 '15  
 Meters and men. C. H. Koehler. Elec Ry J 45:633 Mr 27 '15  
 Reduction in power cost effected by the use of coasting recorders. W. R. Alberger. Elec Ry J 46:520-1 S 18 '15  
 Scientific coasting at Oakland. II Elec Ry J 46:268-71 Ag 14 '15  
 Use of coasting recorders results in economies at Vancouver. W. G. Murrin. II Elec Ry J 46:578-4 S 18 '15  
 Way department report forms. Elec Ry J 46: 396-9 S 4 '15

*See also* Electric railroads—Meters

**Rolling stock**

- All-steel passenger cars for the Pacific electric railway. F. R. Small. II diags Elec Ry J 46: 489-92 S 18 '15  
 Car design from a service standpoint. II diags Elec Ry J 46:578-80 S 18 '15  
 Electric rolling stock ordered in 1914: a tabulation showing the number, type, carbody length and character of construction. Elec Ry J 45:16-18 Ja 2 '15

*See also* Cars; Street cars

**Runaway cars**

- Effective stop for runaway cars. II diag Elec Ry J 45:706-7 Ap 10 '15

**Safety devices and measures**

- Block to protect switch blades of type K controllers. R. H. Parsons. diags Elec Ry J 45:388 F 20 '15  
 Brady medal award. Elec Ry J 45:281-2 F 3 '15  
 Change in car-wiring code recommended. Elec Ry J 45:235 F 6 '15  
 Effective stop for runaway cars. II diag Elec Ry J 45:706-7 Ap 10 '15  
 Effects of remote feeder taps on schedule speed. N. Stahl. Elec Ry J 45:991-2 My 22 '15  
 Feeder-tap protection for d.c. apparatus and a few suggestions regarding the care of commutators. C. H. Smith. Elec Ry J 45: 627-8 Mr 27 '15  
 Reducing accidents in the Milwaukee shops. II Elec Ry J 45:756 Ap 17 '15  
 Report of the committee of A. E. R. A. on lightning protection. Elec Ry J 46:746-7 O 9 '15  
 Results of safety work. F. K. George. Elec Ry J 45:794 Ap 24 '15  
 Safety first movement. II Elec Ry J 45:34-46 Ja 2 '15  
 Safety first movement on the Chicago, Ottawa & Peoria railway. W. F. Carr. Elec Ry J 44:1251 D 5 '14  
 Safety-first organization chart. Elec Ry J 46: 448 S 11 '15  
 Safety of trains on the Chicago elevated. II Elec Ry J 46:302-5 Ag 21 '15  
*See also* Electric railroads—Signals; Street railroads—Safety devices and measures; Subways—Safety devices and measures

**Shops**

- Chicago elevated shop practice. II diags Elec Ry J 45:551-5 Mr 20 '15  
 Cleveland builds four operating stations. II plans Elec Ry J 46:356-61 Ag 23 '15  
 Cleveland railway occupies new repair shops. II diags plan Elec Ry J 46:1022-30 N 20 '15  
 Cleveland railway's new repair shops. II plans Elec Ry J 45:168-73 Ja 23 '15  
 Design, construction and detailed labor costs of car shops for Omaha & Council Bluffs street railway co., Omaha, Neb. W. L. Fulton. diags plans Eng & Contr 44:264-6 O 6 '15  
 Mesabi railway's new repair shops and office building. G. Sargl. plans Elec Ry J 46:312-13 Ag 21 '15  
 Monroe (Tex). maintenance shops. II plan Elec Ry J 46:176-8 Jl 31 '15  
 New carhouse and shops at Holyoke. II plan Elec Ry J 45:980-1 My 15 '15  
 Norfolk & Western electrification. map Elec Ry J 45:1069 Je 5 '15  
 Oil bath tank. R. H. Parsons. diags Elec Ry J 45:65 Ja 2 '15  
 Reducing accidents in the Milwaukee shops. II Elec Ry J 45:756 Ap 17 '15  
 Repair-shop procedure at Milwaukee. II Elec Ry J 45:786-90 Ap 24 '15  
 Shop kinks at Holyoke. II Elec Ry J 45:899 My 8 '15  
 Shop notes from Hampton, Va. II Elec Ry J 46:50-2 Jl 10 '15  
 Special work shop for electric railways. S. Gausmann. plan Elec Ry J 45:992-3 My 22 '15  
 Springfield shops and carhouse. II plans Elec Ry J 45:556-60 Mr 20 '15  
 Tri-city railway trouble board. J. Sutherland. II Elec Ry J 45:1078 Je 5 '15

**Signals**

- Automatic block signals on an interurban railway. II diag Eng N 74:150-1 Jl 22 '15  
 Automatic signals on Norfolk & Western electrified line. II Ry Age 59:21-2 Jl 2 '15  
 Highway-crossing protection; abstract of report of block signal committee of the Illinois electric railways association. II Elec Ry J 45:174-9 Ja 23 '15  
 Highway crossing signal with indicators. II Elec Ry J 46:1046-7 N 20 '15  
 Highway-crossing protection by trolley contact control. II Elec Ry J 44:1357 D 19 '14  
 Illinois traction system signaling. J. Leisenring. II plan Elec Ry J 45:408-10 F 27 '15  
 Interlocking installation on Pacific electric. II Elec Ry J 45:946-7 My 15 '15

**Electric railroads—Signals—Continued**

Joint report on block signals for electric railways. Elec Ry J 46:760-1 O 9 '15  
 Lamp signals for day service on electric railways. Il Eng N 72:1260-1 D 24 '14  
 List of signals installed by electric railways during 1914. Elec Ry J 45:18 Ja 2 '15  
 Original application of signals for city service. diag Elec Ry J 45:1127 Je 12 '15  
 Railway signal association winter meeting. Elec Ry J 45:582-3 Mr 20 '15  
 Signal, bonding and contact rail notes on the Northwestern Pacific. F. T. Vanatta. Il Elec Ry J 46:539-40 S 18 '15  
 Signal maintenance methods on the New York, Westchester & Boston Ry. Il Elec Ry J 45:561-5 Mr 20 '15  
 Signal maintenance on the 1200-volt Oregon electric railway. El. R. Cunningham. Il Elec Ry J 46:557-8 S 18 '15  
 Signal operation on the Oakland, Antioch & Eastern railway. F. A. Miller. Il Elec Ry J 46:536-8 S 18 '15  
 Signals for new Brooklyn subways. Ry Age 57:1191 D 25 '14  
 Special application of car-spacing signals. A. P. Way. Il Elec Ry J 46:368-9 Ag 28 '15  
 Speed-control for the Brooklyn subway. Elec Ry J 45:72 Ja 2 '15  
 Standard aspects for contact signals. H. R. Stadelman. Elec Ry J 44:1354-5 D 19 '14  
 Traffic control at electric railway crossings. Il Munic Eng 48:178-80 Mr '15

**Snow protection and removal**

Removing snow from under-running third-rail. F. L. Hinman. diags Elec Ry J 45:469 Mr 6 '15

**Statistics**

Census report on electric railways. Elec Ry J 45:96-7, 130-2 Ja 9-16 '15  
 Electric railway statistics. Elec Ry J 45:506-7 Mr 13 '15  
 Graphs, charts and statistics as aids to administration. E. C. Stothart. Elec Ry J 46:665-7 O 2 '15

**Substations**

Automatic railway substations. C. M. Davis. Elec Ry J 46:871 O 23 '15  
 Automatic railway substations. C. M. Davis. Gen Elec R 18:976-8 O '15; Excerpt. Elec Ry J 46:772-3 O 9 '15  
 Automatic substations. E. Taylor. Elec Ry J 46:1075-6 N 27 '15  
 Automatically controlled substations with particular reference to their application to interurban electric railways. H. W. Allen and E. Taylor. Il plan Am Inst E E Pro 34:2159-73 S '15; Abstract. Elec Ry J 46:583-6 S 18 '15  
 Economics of electric railway distribution. H. F. Farshall. Elec Ry J 44:1250 D 5 '14; Same (Substation standardization). Elec R & W Elec'n 65:1147 D 12 '14  
 High-voltage direct-current substation machinery. E. S. Johnson. Gen Elec R 18:641-3 J1 '15  
 Operation of a 1200-volt direct-current distribution system. J. Johansen. Il Elec Ry J 46:649-50 S 18 '15  
 Pennsylvania electrification at Philadelphia. Il plan Elec W 66:1074-8 N 13 '15  
 Portable substation at Pittsburgh. Il Elec Ry J 45:1039-40 My 29 '15  
 Rating of railway substation machinery. W. L. Del Mar. Elec Ry J 46:21 J1 3 '15  
 Semi-outdoor portable substation for the Berkshire street railway. Il Elec R & W Elec'n 66:92-4 Ja 9 '15; Elec Ry J 45:56 Ja 2 '15; Eng N 72:1198 D 17 '14  
 Semi-outdoor portable substation for the Berkshire street railway. W. D. Bearce. Il Gen Elec R 18:44-7 Ja '15  
 Substation spacing in a. c. and d. c. systems. W. S. Murray. Elec Ry J 44:1345 D 19 '14

**Switches, frogs, etc.**

Practical views of special work—the tongue switch. R. P. Williams. diags Elec Ry J 46:839-41 S 25 '15

**Taxation**

Report of the committee of A. E. R. A. on taxation. Elec Ry J 46:733-5 O 9 '15

**Terminology**

Contact system nomenclature. El. H. McHenry. Elec Ry J 46:275 Ag 14 '15  
 New technical terms in heavy electric traction. Elec Ry J 46:214-15 Ag 7 '15

**Track**

Corrugation of rails in electric railway service. Ry Age 58:1449 Je 18 '15  
 Rail-laying outfit on the Kankakee & Urbana traction line. T. W. Shelton. Il Elec Ry J 45:342 Ja 30 '15  
 Signal, bonding and contact rail notes on the Northwestern Pacific. F. T. Vanatta. Il Elec Ry J 46:539-41 S 18 '15  
 Steel tie construction in electrically-warmed concrete. J. M. Bamberger. Il diag Elec Ry J 45:189-90 Ja 23 '15  
 Tests show satisfactory return-circuit conditions in Providence. R. I. Elec Ry J 46:825-6 O 16 '15  
 Track joining and bonding. El. C. Price. Elec Ry J 45:1156-7 Je 19 '15  
*See also* Electric railroads—Switches, frogs, etc.; Street railroads—Track

**Valuation**

Foundation principles of valuation. B. J. Arnold. Elec Ry J 46:713-19, 803-6 O 9-16 '15; Discussion. 46:732-3 O 9 '15  
*See also* Public service corporations—Valuation; Street railroads—Valuation

**Wiring**

Change in car-wiring code recommended. Elec Ry J 45:285 F 6 '15  
 Contact conductors and collectors for electric railways. C. J. Hixson. Il diags Am Inst E E Pro 34:1477-90 Ag '15; Abstract. Elec Ry J 46:60-1 J1 10 '15  
 Effects of remote feeder taps on schedule speed. N. Stahl. Elec Ry J 45:991-2 My 22 '15  
 Feeder-tap protection for d. c. apparatus and a few suggestions regarding the care of commutators. C. H. Smith. Elec Ry J 45:827-8 Mr 27 '15  
 Location of trolley wire on curves. S. L. Foster. diags Elec Ry J 45:62-4, 105, 142-3, 191, 244 Ja 2-30 '15  
 Sectionalizing of electric railway feeders at San Diego. H. MacNutt. plan Elec Ry J 46:496-9 S 18 '15  
 Trolley wire on double-leaf bascule bridge. S. L. Foster. diags Elec Ry J 46:1042-4 N 20 '15  
 Trolley wires on curves. plan Colliery 36:33 Ag '15  
 Unusual feed-in clamp. S. L. Foster. diags Elec Ry J 46:322 Ag 21 '15

**Alsace**

Features of electric railway in Alsace. Elec Ry J 46:1091 N 27 '15

**Austria**

Vienna-Pressburg single-phase railway. El. E. Seefehner. Il Elec Ry J 45:828-31, My 1 '15

**California**

Building up local pleasure travel to points in the East Bay cities. J. H. Brown. Il Elec Ry J 46:593-5 S 18 '15  
 Electric railway paradise. P. Shoup. Il map Elec Ry J 46:475-80 S 18 '15  
 15-cycle single phase railway in California. Il Engineer 120:2-3 J1 2 '15  
 Handling traffic to the Panama-California exposition at San Diego. E. M. Warner. Il Elec Ry J 46:508-9 S 18 '15  
 Notes on Southern Pacific electric service in the Bay cities. J. C. McPherson. Il Elec Ry J 46:544-5 S 18 '15  
 Operation of the Pacific electric railway. Il map Ry Age 59:225-9 Ag 6 '15

**Canada**

1500-volt direct-current electrification of the Ontario municipal railway. G. H. Hill. Gen Elec R 18:10-11 Ja '15  
 Hamilton electric incline railway. Il Elec Ry J 46:115-16 J1 17 '15

**Electric railroads—Continued****Connecticut**

Connecticut commission report. Elec Ry J 44:1401-2 D 26 '14

**Germany**

German 1500-volt d.c. line with regeneration and battery. Elec Ry J 45:274 F 6 '15

**Great Britain**

British managers discuss conditions. Elec Ry J 46:224 Ag 7 '15

L. C. C. tramways. Engineer 120:106-7 J1 30 '15

Tramways in the United Kingdom; operating results for the year 1912-1913. A. J. Lawson. Elec Ry J 45:929 My 15 '15

Working of tramways in the United Kingdom. A. J. Lawson. Engineer 118:577-8, 600-1 D 18-25 '14

**Idaho**

1500-volt interstate interurban railway. II map Elec Ry J 46:1073-4 N 27 '15

**Indiana**

Address. T: Duncan. Elec Ry J 45:456-8 Mr 6 '15

Electric railway taxation in Indiana. Elec Ry J 45:53 Ja 2 '15

**Maine**

Portland & Lewiston interurban. II map Elec Ry J 46:518-21 S 25 '15

**Spain**

Electric traction in Spain. W. Reinhart. Elec W 66:350 Ag 14 '15

**Switzerland**

Looping the loop in the Alps. J. F. Springer. II Sci Am 111:504-5 D 19 '14

**United States**

Development of the electric railway. J. H. McGraw. Elec Ry J 46:723-4 O 9 '15

Electric railway track built in 1914. Elec Ry J 45:14-15 Ja 2 '15

Year in the electrical industry. Elec R & W Elec'n 66:3 Ja 2 '15

**Utah**

1500-volt interstate interurban railway. II map Elec Ry J 46:1073-4 N 27 '15

Salt Lake & Utah railroad. II map Elec Ry J 45:54-5 Ja 2 '15

**Virginia**

Traffic notes from Hampton, Va. II Elec Ry J 46:317-18 Ag 21 '15

**Electric railroads and state**

Address. T: Duncan. Elec Ry J 45:456-8 Mr 6 '15

Argument on authority of Interstate commerce commission to require reports of accidents and other statistics from urban railways. J: T. Beasley. Elec Ry J 44:1339-90 D 26 '14

Code of principles. O. T. Crosby. Elec Ry J 45:270-3 F 20 '15

Electric railway association, American. See American electric railway association

Electric railway association, Central. See Central electric railway association

**Electric railway journal**

Results of a straw ballot of readers' preferences. Elec Ry J 45:52-3 Ja 2 '15

**Electric railway mail service**

Compensation for carrying United States mail; A. E. R. A. committee report. Elec Ry J 46:727-8 O 9 '15

Electric railway mail statistics from report of second assistant postmaster general for year ended June 30, 1914. Elec Ry J 44:1337 D 26 '14

Electric rates. See Electric power—Rates

**Electric resistance**

Adjustments of the Thomson bridge in the measurement of very low resistances. F. Wenner and E. Weibel. U S Bur Stand Bul 11:65-8 N 15 '14

Calibration of current transformers by means of mutual inductance. C. Fortescue. diags pls Am Inst E E Pro 34:1199-1215 Je '15

Carbon as a heating element in appliances. C. W. Piper. Elec W 66:134-5 J1 17 '15

Comparisons of electric resistivities at high temperatures. C. Hering. Met & Chem Eng 13:23-8 Ja '15

Court of appeals decision in nickel-chromium resistor suit. Met & Chem Eng 13:414-15 J1 '15

Distortion of alternating current wave caused by cyclic variation in resistance. F. Bedell and E. C. Mayer. diags Am Inst E E Pro 34:177-86 F '15; Discussion. 34:2584-9 O '15

Effective resistance and inductance of iron and bimetallic wires. J. M. Miller. diags U S Bur Stand Bul 12:207-67 N 8 '15

Electrical resistance and critical ranges of pure iron. G. K. Burgess and L. N. Kallberg. U S Bur Stand Bul 11:467-70 My 10 '15

Experimental researches on skin effect in conductors. A. E. Kennelly, F. A. Laws and P. H. Pierce. bibliog II diags Am Inst E E Pro 34:1749-1814 Ag '15

Insulating properties of solid dielectrics. H. L. Curtis. diags U S Bur Stand Bul 11:359-420 My 10 '15; Excerpt (Volume resistivity table) Elec R & W Elec'n 66:171 Ja 23 '15

Method for measuring earth resistivity. F. Wenner. J Fr Inst 180:373-5 S '15; Same. Elec R & W Elec'n 67:980 N 27 '15

Methods of measuring the inductances of low-resistance standards. F. Wenner, E. Weibel and F. B. Silsbee. diags U S Bur Stand Bul 12:11-21 O 28 '15

Proper construction of earth connections. G. H. Rettew. Gen Elec R 18:904-7 S '15; Abstract. Engineer 120:462 N 12 '15

Receiving-end impedance of a conducting line loaded at both ends. A. E. Kennelly. Elec W 66:183-4 J1 24 '15

Skin effect in bimetallic wires. J. M. Miller. Elec W 65:1612-13 Je 19 '15

Temperature coefficient formulae for copper. J. D. Ball. Gen Elec R 18:669 J1 '15

Volume resistivity and surface resistivity of insulating materials. H. L. Curtis. diag Gen Elec R 18:996-1001 O '15

Wheatstone bridge for resistance thermometry. C. W. Waldner and others. II diags U S Bur Stand Bul 11:571-90 My 27 '15

See also Electric conductivity; Electric measurement; Electric testing; Insulation; Rheostats

**Electric service, Rural**

Analysis of central-station practice in Wisconsin regarding rural service. Elec R & W Elec'n 66:237-9 F 6 '15

Economics of the rural-customer problem. II Elec W 65:176 Ja 16 '15

Meter practice on rural electric-service lines. II Elec W 64:1110 D 5 '14

**Electric service companies**

Advancing the commercial purpose. Elec W 65:1640 Je 19 '15

Business hints for dealer and contractor. G. D. Crain, jr. Elec R & W Elec'n 66:1059-60 Je 5 '15

Central-station business improves; statistics. Elec W 65:981-3 Ap 17 '15

Central-station development of Portland, Maine. II map Elec W 65:519-22 F 27 '15

Central-station returns for October. Elec W 65:92-3 Ja 9 '15

Colorado electric light, power and railway association 13th annual convention. Elec W 66:792-3 O 9 '15

Commercial practices in California. H. B. Pitts. II Elec W 65:1409-12 My 29 '15

Demonstration of a power sale; abstract. C. H. Stevens. Elec W 65:1525-6 Je 12 '15

Electric developments on the Pacific coast. II Elec W 65:1337-38 My 29 '15

How the use of appliances increases the residence non-lighting load. Elec W 66:980 O 30 '15

Irrigating the land of little rain. S. M. Kennedy. II diags Elec W 65:1471-4 Je 5 '15

Irrigation in the Wenatchee valley. A. Gunn. II Elec W 65:1560-3 Je 12 '15

Irrigation pumping in the coast states. II map Elec W 65:1399-1408 My 29 '15

**Electric service companies—Continued**

Middle west utilities: companies register a 7.8 per cent growth in income and a 9.5 per cent growth in output. Elec W 64:1174 D 12 '14

N. E. L. A. New England section 7th annual convention. Elec R & W Elec'n 67:577-83 S 25 '15

Northwest electric light and power association 8th annual convention, Portland, Ore. Elec R & W Elec'n 67:523-34 S 18 '15

Northwest electric light and power association's 8th annual convention, Portland, Ore. Elec W 66:567-9 S 11 '15

Ohio central-station men meet in Cleveland. Elec R & W Elec'n 66:192-3 Ja 30 '15

Ohio electric light association convention at Cedar Point. Elec W 66:219-20 JI 24 '15

Ohio new-business men hold profitable convention. Elec R & W Elec'n 67:967-8 N 27 '15

Pacific gas & electric company. Elec W 65:1689-70 Je 26 '15

Pennsylvania electric association 8th annual convention. Elec R & W Elec'n 67:524-3 S 18 '15

Pennsylvania electric association 8th annual convention. Elec W 66:661-2 S 18 '15

Relations between contractor and central station; abstract. A. E. Loeb. Elec W 66:662 S 18 '15

Small consumer—a problem. A. D. Dudley. Gen Elec R 18:657-8 JI '15; Abstract and discussion. Elec W 65:1324-5 My 22 '15

Stability in the central-station industry. F. Nicholas. Elec W 66:572-4 S 11 '15

Successful meeting of Ohio new-business men. Elec R & W Elec'n 66:580-1 Mr 27 '15

Why central stations do not get all the big power business; symposium. Elec W 66:759-60 O 2 '15

Year of sales at Providence, R. I. II Elec W 65:1311-15 My 22 '15

*See also* Electric plants—Central stations; Electric service, Rural; Electric vehicles and the central station

**Accounting**

Accounting methods; discussed by N. E. L. A. Elec W 65:1531-2 Je 12 '15

Billing and collecting systems of small companies. Elec R & W Elec'n 67:184-6 JI 31 '15

Electric consumer's ledger sheets. Elec W 65:304 Ja 30 '15

Electric light and power accounting. O. A. Small. Elec Ry J 46:1113 Je 12 '15

N. E. L. A. accounting section. H. M. Edwards. Elec W 65:498-9 F 20 '15

N. E. L. A. accounting section. L. M. Wallace. Elec W 65:544 Mr 13 '15

Small-customer question. H. E. Eisenmenger. Elec R & W Elec'n 67:657-62 O 9 '15

Small-town distribution and management cost. E. A. Wright. Elec W 65:338-41 F 6 '15

System of accounting for central-station companies. Elec R & W Elec'n 67:228 Ag 7 '15

**Advertising**

Advertising electricity to manufacturers. Elec W 65:547-9 F 27 '15

Attracting the good will of 2,500,000 people. Elec W 66:1024-5 N 6 '15

Campaigning past the saturation point. Elec W 66:814-15 O 9 '15

Carrying the display room to the customer. II Elec W 66:26-30 JI 3 '15

Cheap-residence wiring campaign of the Lehigh valley light & power company. Elec W 65:425-6 F 13 '15

Commercial lighting campaign in Salt Lake City. II Elec R & W Elec'n 66:417-18 Mr 6 '15

Efficiency and comfort in the home: views of model apartments. Elec W 66:207 JI 24 '15

Electric range advertisement that sold 22 ranges. Elec R & W Elec'n 67:971 N 27 '15

Electrical Fourth in your town. II Elec W 65:1696-7 Je 28 '15

Flatiron sold every seven seconds. Elec W 66:200-1 JI 24 '15

Getting ready for moving day—enlisting the public's help. Elec W 66:649 S 18 '15

House electric at Rockford, Ill. II Elec R & W Elec'n 66:680-1 Ap 10 '15

How 700 houses were wired in one year at Topeka, Kan. Elec W 65:117-18 Ja 9 '15

Kansas City, Mo. keeps up load-building. Elec R & W Elec'n 65:1209-10 D 26 '14

N. E. L. A. committee report on merchandising and recent developments in electrical appliances. Elec W 65:1522-3 Je 12 '15; Elec R & W Elec'n 66:1109-13 Je 12 '15

Obtaining the good will of the public. Elec R & W Elec'n 67:146-7 JI 24 '15

Old-house-wiring campaign. E. R. Davenport. Elec W 65:388-9 F 13 '15

Practical policy of local co-operation and the story of a six-day appliance sale in Dayton, Ohio. Elec W 66:645-6 S 18 '15

Premium plan that wired 250 houses in Minneapolis. Elec W 66:417-19 Ag 21 '15

Public-school boy as a pathfinder. Elec W 66:95-6 JI 10 '15

Results of fall housewiring campaign at Kokomo, Ind. II Elec W 64:1206 D 19 '14

Selling in the irrigation country. II Elec W 65:1414-17 My 29 '15

Service panel introduces electricity in many homes. plan Elec W 65:738 Mr 20 '15

Shall the central station sell appliances? J. H. Moseley. Elec R & W Elec'n 67:466-9 S 11 '15

Smashing iron slide slogan of Rome (N. Y.) sales campaign. II Elec W 66:648 S 13 '15

Stage craft in the electric shop. M. J. Russell. II Elec W 65:1693-5 Je 26 '15

Starting Christmas sales with prosperity week. II Elec W 66:1192-4 N 27 '15

Telling the story of public service to the public. Elec W 66:1203 N 27 '15

Topeka house-wiring campaign shows immediate profit. Elec W 66:1195-6 N 27 '15

Typical house and the testimonial; advertising campaign at Louisville, Ky. Elec W 66:305-7 Ag 7 '15

Unique type of central-station newspaper advertising. Elec R & W Elec'n 67:838 N 6 '15

Value of advertising. A. Williams. II Elec W 65:1001-2 Ap 17 '15

What advertising has done for the Denver company. Elec R & W Elec'n 66:722-3 Ap 17 '15

White way as a business getter for the central station. II Elec W 65:1697 Je 28 '15

Window suggestions for Thanksgiving and electrical prosperity week. II Elec W 66:1097 N 13 '15

Winning old houses by special inducement. Elec W 66:145-6 JI 17 '15

*See also* Electrical prosperity week

**Finance**

Application of the diversity-factor; abstract. H. B. Gear. Elec W 65:1515-16 Je 12 '15

Boston Edison company's steady growth. Elec R & W Elec'n 67:609 S 18 '15

Continued gain in light and power industry. Elec W 66:456-8 Ag 23 '15

Electrical securities and the central-station industry in 1914—prospects for 1915. J. M. C. Hampson. Elec R & W Elec'n 66:18-20 Ja 2 '15

Financial needs of the electrical industry. F. A. Vanderlip. Elec W 66:684-5 S 25 '15

Kansas City plan filed. Elec Ry J 46:830-1 Ag 21 '15

Pacific gas and electric company's 9th annual report. Elec W 66:427-8 Ag 21 '15

Salosmen's ideas on minimum monthly bills. II Elec W 66:147 JI 17 '15

Southern California Edison company annual report, 1914. Elec W 65:1032 Ap 24 '15

*See also* Electric service companies—Accounting; Electric service companies—Valuation of property

**Franchises**

Agreement reached in important utilities consolidation. Elec R & W Elec'n 66:4 Ja 2 '15

**Law**

Liability of electric company using joint poles. Elec W 64:1154 D 12 '14

**Management**

Applying the show-me policy in motor-service sales. II Elec W 65:1080 Ap 24 '15

Campaign to reduce delinquency; a five-year record by the American gas & electric company's properties. Elec W 65:998-9 Ap 17 '15

**Electric service companies—Management—Cont.**

- Card index increases efficiency of new-business department. Elec R & W Elec'n 66:899-900 My 15 '15
- Central-station practice in renting motors. Elec R & W Elec'n 67:605 O 2 '15
- Central-station sales department organization and work. F. D. Beardslee. Elec R & W Elec'n 65:1073-9 D 5 '14
- Contract-order routine in Louisville. Elec R & W Elec'n 66:29-30 Ja 2 '15
- Details of Cincinnati appliance campaign. Elec R & W Elec'n 67:360-1 Ag 28 '15
- High cost of rendering bills. Elec R & W Elec'n 67:478 S 11 '15
- How can gas and electric companies under one management render the best light service? A. B. Spaulding and N. H. Potter. Am Gas Light J 103:218-19 O 4 '15
- Mapping the motor opportunity. map Elec W 65:1199-1200 My 8 '15
- Merchandising by central stations. T. I. Jones. II Elec W 65:227-9 Ja 28 '15
- Office and stock-room methods. Elec W 65:1086 Ap 24 '15
- Power development methods for Iowa central stations. E. Soukup. Elec R & W Elec'n 66:807-8 My 1 '15
- Results of two years of motor leasing by group of New England companies. Elec W 66:1150 N 20 '15
- Resumption of sale of appliances by Rochester company. II Elec W 66:287-8 Jl 31 '15
- Sale of current to municipally owned distributing systems by central stations. W. R. Collier. Elec R & W Elec'n 67:890-3 N 18 '15
- Sale of electric power. T. R. Hay. Elec R & W Elec'n 66:418-19 Mr 6 '15
- Secrets of successful merchandising. II Elec W 65:1637-9 Je 19 '15
- Selling lamp-socket appliances; an analysis of eleven years' experience in marketing electric household devices in southern California. S. M. Kennedy. Elec W 65:1412-14 My 29 '15
- Service rules of twelve central stations. Z. D. Mayhew. II diag Elec W 65:1057-9 Ap 24 '15
- Should the salesman collect money? E. H. Whitehorse. Elec W 66:921-3 O 23 '15
- Successful policies that promote beneficial relations between central stations and contractors. Elec W 66:1098 N 13 '15

**Offices**

- Electrical equipment and efficient features of the new office building of the Hartford electric light company. II diag Elec W 65:206-9 Ja 28 '15
- Electrical features of new office building of New Bedford, Mass., central station. II Elec R & W Elec'n 67:507-8 S 18 '15

**Public relations**

- Baby bond that guarantees paid bills. G. B. Saunders. Elec W 66:1084-5 N 6 '15
- Central-station publicity campaign in a municipal lighting plant situation. Elec R & W Elec'n 66:866-7 My 8 '15
- Electric service as a reason for town pride. E. B. Fenton. Elec W 66:757-8 O 2 '15
- Keeping industrial-motor users satisfied. Elec W 65:175-6 Ja 16 '15
- N. E. L. A. public policy committee report. Elec W 65:1510-11 Je 12 '15; Elec R & W Elec'n 66:1107 Je 12 '15
- Old-business department to serve the company's old friends. Elec W 66:595 S 11 '15
- Progressive public policy and its results. II Elec W 65:470-2 F 20 '15
- Public relations as business assets. Elec W 66:742-3 O 2 '15
- Stimulating friendly relations by sale of baby bonds. Elec R & W Elec'n 67:510-11 S 18 '15

**Rates**

See Electric lighting—Rates; Electric power—Rates

**Regulation**

- Beaver river power and light company. Elec R & W Elec'n 66:631-2 Ap 3 '15
- Best control of public utilities. F. G. Baum. Am Inst E E Pro 34:1-23 Ja '15; Abstract. Elec W 65:258-9 Ja 23 '15

- Bloomer, Wis., electric light & power company; electric service from rural districts. Elec R & W Elec'n 67:848-9 N 6 '15
- Canada voices its right to forbid the exportation of electrical energy. Elec W 65:311-12 Ja 30 '15
- Decision by Oregon commission, with table of costs for different classes of consumers of the Hood River gas and electric company. Elec W 66:431 Ag 21 '15
- Hearings on water-power bill. Elec W 64:1189 D 19 '14
- Massachusetts commission advises against central-station ice-making. Elec W 65:498 F 20 '15; Elec R & W Elec'n 66:335 F 20 '15
- Merger of Buffalo companies authorized. Elec W 66:37-8 Jl 3 '15
- Municipal regulation of public utilities; abstracts. J. H. Roemer. Elec W 65:1511-12 Je 12 '15; Elec R & W Elec'n 66:1107-8 Je 12 '15
- Public utility regulation in California; abstract. M. Thelen. Elec W 65:1512 Je 12 '15
- Rates and by-products. J. R. Cravath. Elec W 65:1029 Ap 24 '15
- Standards for gas and electric service in Illinois. Eng N 72:1148-9 D 10 '14
- State commission with jurisdiction over electrical utilities; map. Elec W 65:1597 Je 19 '15

**Rural service**

See Electric service, Rural

**Valuation of property**

- Appraisal of small electric properties. E. D. Dreyfus. Elec R & W Elec'n 66:433-8, 500-5 Mr 6-13 '15
- Cincinnati rate case. Elec W 66:377-8 Ag 14 '15
- Indianapolis electric rate cases. Elec R & W Elec'n 67:235-7 Ag 7 '15
- Symposium on inventories and appraisals of properties. C. L. Cory; W. G. Vincent, jr.; W. J. Norton. Am Inst E E Pro 34:2131-58 S '15
- Valuation of the property of the Kansas City electric light company. Elec W 65:1343 My 22 '15

**Electric shock**

- Causes of electrical accidents in English collieries. diag Elec R & W Elec'n 67:903 N 13 '15
- Contest in rescue and resuscitation work between line crews. II Elec W 66:1015 N 6 '15
- Electric shock. Elec R & W Elec'n 66:686-7 Ap 10 '15
- Safety in stone quarrying; treatment for electric shock. O. Bowles. II U S Bur Mines Tech Pa 111:40-3 '15

**Electric shops**

- Business hints for dealers. G. D. Crain, jr. Elec R & W Elec'n 66:809-10; 67:664-5, 755-6, 932-3 My 1, O 9, 23, N 20 '15
- Christmas merchandising co-operation—ready for you. II Elec W 66:1199-1200 N 27 '15
- Competing for appliance business. II Elec W 65:1053-6 Ap 24 '15
- Electric-heating appliance salesroom. II Elec W 65:800-3 Mr 27 '15
- Formal opening of Commonwealth Edison company's new office building, Chicago. II Elec R & W Elec'n 67:584-5 S 25 '15
- How to merchandise electrical appliances. J. V. Guilfoyle. II Elec W 65:541-3 F 27 '15
- Jobbing policy with service as the watchword. II Elec W 66:1094-5 N 13 '15
- Keeping the electric shop awake and working. II Elec W 66:593-5 S 11 '15
- Marketing electricity. II Elec W 66:703 S 25 '15
- Merchandising by central stations. T. I. Jones. II Elec W 65:227-9 Ja 28 '15
- Problems of slow-moving stock. II Elec W 66:471-4 Ag 28 '15
- Stage craft in the electric shop. M. J. Russell. II Elec W 65:1693-5 Je 26 '15
- Starting Christmas sales with prosperity week. II Elec W 66:1192-4 N 27 '15
- Year of sales at Providence, R. I. II Elec W 65:1311-15 My 23 '15
- See also Electric railroads—Shops
- Electric shops, Municipal**  
Kansas City has municipal electric shop. Elec R & W Elec'n 66:34 Ja 2 '15

**Electric shovels**

- Alternating-current controllers for steel mills. A. Simon. *II Am Inst E E Pro* 34:743-5 My '15; Same. *Iron Tr R* 57:527-8 S 16 '15  
 Costs of electric shovel work at Cleveland. *II Elec Ry J* 44:1261-2 D 5 '14; Same. *Elec R & W Elec'n* 66:172-3 Ja 23 '15  
 Low-clearance mechanical shovel. *diags Eng M* 49:214-15 S '15  
 Methods and costs of electric shovel work; removing slides and side cutting for electric railway. *diags Eng & Contr* 43:154-5 F 17 '15  
 Thew electric shovel for railway work. *II Elec Ry J* 46:681-2 O 2 '15

**Electric signals**

- Alternating current signaling. *Elec Ry J* 46:880 O 23 '15  
 Battery bell signaling in English mines. R. V. Wheeler. *Elec R & W Elec'n* 66:903-4 My 15 '15; Same. *Elec W* 65:1304 My 22 '15  
 Development of main-line signalling on railways. W. C. Acfield. *diags Inst E E J* 53:763-84; Discussion. 53:784-98 Je 1 '15  
 Electric shriek to warn mariners: Blériot air stren. *II Sci Am* 112:300 F 27 '15  
 Electric signal horns for factories. *II Elec R & W Elec'n* 67:993 N 27 '15  
 Electric train staff on the Canadian Pacific. E. S. Taylor. *diags Ry Age* 58:100-1 Ja 15 '15  
 Electrical system of cab-signalling. V. L. Raven. *II diags Engineer* 119:85-6 Ja 22 '15  
 Hospital signal-lighting system. *diag Elec W* 66:1219 N 27 '15  
 Method to notify firemen when chimneys smoke. *diag Elec W* 66:301-2 Ag 7 '15  
 Paint twin cableways red and blue for electric signal system. H. E. Ketchum. *II Eng Rec* 72:117 JI 24 '15  
 Protection of railway signal circuits against lightning disturbances. E. K. Shelton. *Gen Elec R* 18:1127-8 D '15  
 Real signaling devices for automobiles. *II Sci Am* 113:274-5 S 25 '15  
*See also* Electric alarms; Electric railroads—Signals; Fessenden oscillator; Interlocking plants; Mine signals; Railroads—Signals

**Electric signs**

- Chase changeable signs. *II Elec R & W Elec'n* 67:991 N 27 '15  
 Christmas sign of the Houghton & Dutton company. *II Elec R & W Elec'n* 65:1171 D 19 '14  
 Effective sign for newspaper. *II Elec R & W Elec'n* 67:509 S 18 '15  
 Elaborate electrical Christmas displays at Boston. *II Elec W* 64:1219 D 19 '14  
 Electric signs of London tube railways. *II Elec R & W Elec'n* 66:25 Ja 2 '15  
 Electrical advertising. *II Elec R & W Elec'n* 65:1080 D 5 '14  
 Electrically operated motion signs on horse-drawn trucks. *II Elec R & W Elec'n* 67:992 N 27 '15  
 Electrograph. *Elec R & W Elec'n* 66:1007 Je 5 '15  
 Modeling of electrically lighted designs. *II Elec R & W Elec'n* 66:32 Ja 2 '15  
 Novel electric sign at Fort Arthur, Tex. *II Elec R & W Elec'n* 66:241 F 6 '15; Same. *Elec W* 65:426 F 13 '15  
 Sign installation in Cincinnati. *II Elec R & W Elec'n* 65:1169 D 19 '14  
 Spectacular electrical display erected by St. Louis central station. *II Elec R & W Elec'n* 67:909-10 N 13 '15  
 Spectacular gas and electric sign in Louisville attracts attention. *II Elec R & W Elec'n* 67:969-70 N 27 '15  
 Spectacular sign of Ford motor company. *II Elec R & W Elec'n* 66:983-4 My 29 '15  
 Spectacular theater sign in Cincinnati. *II Elec R & W Elec'n* 66:336 F 20 '15  
 Steel frame for a large electric sign. *diags Eng N* 73:1071 Je 3 '15  
 Talking signs; prevention of arcing. *Elec R & W Elec'n* 67:978-9 N 27 '15  
 Unique Chinese sign. *II Elec R & W Elec'n* 66:111 Ja 16 '15  
 Unique lighting of Seattle theater. *II Elec R & W Elec'n* 66:377 F 27 '15

**Laws and regulations**

- Electric sign legislation in Massachusetts. *Elec R & W Elec'n* 66:420 Mr 6 '15

**Electric sounding. See Sounding****Electric sparks**

- Magneto spark vs. battery-coil spark. D. H. Cunningham. *Automobile* 31:1020-3 D 3 '14

**Electric standards**

- British standardization rules. *Elec W* 65:1245 My 15 '15  
 Construction of primary mercurial resistance standards; abstract. F. A. Wolff. M. P. Shoemaker, and C. A. Briggs. *J Fr Inst* 180:104-6 JI '15  
 N. E. L. A. report on standardizing plugs and receptacles. *Elec W* 65:256-7 Ja 23 '15; Same. *Elec R & W Elec'n* 66:245 F 6 '15  
 New A. I. E. E. standardization rules. *Elec Ry J* 44:1232 D 5 '14  
 Nominal rating of railway motors. G. H. Hill. *Elec Ry J* 46:275-6 Ag 14 '15  
 Pennsylvania overhead line crossing specifications. *Elec Ry J* 46:186 JI 31 '15  
 Standardization of plugs and receptacles. *II Elec W* 65:567-8 F 27 '15  
 Standardization rules of the American institute of electrical engineers; approved by the board of directors, June 30th, 1915, to take effect July 1, 1915. *Am Inst E E Pro* 34:1939-2041 Ag '15

**Electric starters**

- Momentary current of starting motors. B. F. Bailey. *Horseless Age* 35:850 Je 23 '15  
 Same starting equipment for large and small machines. *II plan Elec W* 65:420-1 F 13 '15  
*See also* Automobiles—Starting devices; Electric motors—Starting devices

**Electric sterilization**

- Electric sterilization of milk. *Elec R & W Elec'n* 67:994 N 27 '15  
 Electricity for sterilizing purposes. W. B. Underwood. *II Elec W* 65:34 Ja 2 '15  
 Purification of milk by electricity. *II Elec W* 64:1153-4 D 12 '14

**Electric stoves**

- Effect of electric ranges on central-station load in Seattle. *Elec W* 66:646-7 S 18 '15  
 Globe electric ranges. *II Elec R & W Elec'n* 67:340-1 Ag 21 '15  
 Large-sized electric-cooking apparatus. *II Elec W* 66:1103-4 N 20 '15  
 Neuco electric cooking appliances. *II Elec R & W Elec'n* 67:343-4 Ag 21 '15  
 New types of Globe electric ranges and stoves. *II Elec R & W Elec'n* 67:907 N 13 '15  
 69-kw. electric range to cook for 1500 hospital patients and employees. *II Elec W* 66:1162 N 20 '15  
 Unit-part electric range. *II Elec W* 66:884-5 O 16 '15

**Electric street sweepers. See Street cleaning apparatus, Electric**

- Electric strength of air. J. B. Whitehead. *Am Inst E E Pro* 34:843-65 My '15; Discussion. 34:2997-3005 D '15

**Electric substations. See Electric plants—Substations; Electric railroads—Substations****Electric supplies. See Electric industries; Electric shops**

- Electric supply company, Memphis, Tennessee. Notable southern jobber. *II Elec R & W Elec'n* 65:526-7 Mr 20 '15

**Electric switchboards. See Switchboards****Electric switches**

- Arc phenomena. A. G. Collis. *II diags Am Inst E E Pro* 34:2081-2100 S '15  
 Arcing characteristics of air-break switches. C. E. Bennett. *II Elec W* 66:353-5 O 16 '15  
 Automatic starting switches for small alternating-current motors. *II Elec R & W Elec'n* 66:1007 My 29 '15  
 Balanced disconnecting switch. *II Elec R & W Elec'n* 67:632 O 2 '15  
 Battery switches—charge indicators. P. M. Heldt. *diags Horseless Age* 35:740-2 Je 2 '15  
 Brush-type lever switch. *II Elec W* 66:603 S 11 '15  
 Demountable switch. *II Elec W* 65:876 Ap 3 '15  
 Developments in electrical apparatus during 1914. J. Liston. *II diags Gen Elec R* 18:90-2 F '15



**Electric switches—Continued**

- Disconnecting switch with torsional-balanced blade. *Il Elec W 66:939 O 23 '15*  
 Double-ear overhead switch. *Il Elec Ry J 46:1091 N 27 '15*  
 Electrically wound time switch. *Il Elec R & W Elec'n 66:1066 Je 6 '15*  
 Entrance switch and stage pocket. *Il Elec R & W Elec'n 66:1193 D 19 '14*  
 Fused switch that prevents replacement of fuses while switch is closed. *Il Elec W 66:602-3 S 11 '15*  
 High-tension switch gear arrangements. T. T. Evans. *Il Engineer 119:461-2 My 7 '15*  
 High-tension switching systems. J. A. Randolph. *Power 41:434-5 Mr 30 '15*  
 High-voltage, three-phase air-break switch. *Il Elec W 66:935 O 23 '15*  
 Improved disconnecting switches and busbar supports for large generating plants. *Il Elec R & W Elec'n 67:728-31 O 16 '15; Elec W 66:833-4 O 16 '15*  
 Improved tripping mechanism for oil switch. *diag Elec W 66:39 Ja 2 '15*  
 Interchangeable high-tension switches. —C. Opitz. *diag Elec W 66:124 J1 17 '15*  
 Lever switches for low-voltage circuits. *Il Elec W 66:1163 N 20 '15*  
 New line of Cutler-Hammer magnetic switches. *Il Elec R & W Elec'n 66:1099 D 5 '14*  
 Oil knife switches. *Il Elec Ry J 46:157 J1 24 '15*  
 Oil-switch explosions. *Elec W 66:1154 My 8 '15*  
 Outdoor switch houses. *Il Elec R & W Elec'n 67:33-4 J1 3 '15*  
 Recent developments in switchboard apparatus. E. H. Beckert. *Il diags Gen Elec R 18:646-57 J1 '15*  
 Same starting equipment for large and small machines. *Il plan Elec W 66:420-1 F 13 '15*  
 Service switch arranged for disconnection of fuses before handling. *Il Elec R & W Elec'n 67:444 S 4 '15*  
 Simple battery switching scheme for operating oil circuit-breakers. *diag Elec W 66:1091 N 13 '15*  
 Six-ampere pull switch. *Il Elec W 66:1222 N 27 '15*  
 Switch designed to exclude insects. *Il Elec W 66:304 Ag 7 '15*  
 Switching equipment in plant of Indiana railway & light company. *Il Elec R & W Elec'n 66:926 My 15 '15*  
 Tank lifters for small oil switches. *Il Elec Ry J 46:71-2 J1 10 '15; Iron Age 96:185 J1 22 '15; Power 42:156 Ag 3 '15*  
 Three-in-one oil and disconnecting switch. *Il Elec W 66:1105-6 N 13 '15*  
 Time switch for series-tungsten street-lighting system. J. P. Byron. *diags Elec W 66:223 Ja 23 '15*
- Electric symbols**  
 International symbols; report issued by the International electrotechnical commission. *Inst E E J 53:106-8 D 15 '14*  
 Standardization rules of the American institute of electrical engineers; approved by the board of directors, June 30th, 1915, to take effect July 1, 1915. *Am Inst E E Pro 34:1946-8 Ag '15*  
 Units and notation; abstract. *Elec W 64:1116 D 5 '14*
- Electric taxicabs.** See **Taxicabs, Electric**
- Electric terminology.** See **Electric wire and wiring—Terminology; Electricity—Terminology**
- Electric testing**  
 Automatic device for timing relay and fuse operation. *plan Elec W 66:808-9 Mr 6 '15*  
 Effect of altitude on the spark-over voltages of bushings, leads and insulators. F. W. Peek, jr. *Il diags Am Inst E E Pro 33:1877-86 D '14; Same. Gen Elec R 18:137-42 F '15; Discussion. Am Inst E E Pro 34:1328-49 Je '15*  
 Field and armature tester. *Il Elec W 66:262 J1 31 '15*  
 High-tension test. W. P. Woodward. *Il Gen Elec R 18:398-401 My '15*  
 Life-testing equipment for tungsten lamps; electrical features of the incandescent lamp-testing laboratory at Nela Park, Cleveland. *Il plan Elec W 66:12-16 J1 3 '15*

- Measuring the current in d. c. circuits. O. A. Knopp. *Il diags Elec W 66:751-2 O 2 '15*  
 Methods of testing the Scherbius compensator. A. A. Ahmed. *Inst E E J 53:540-8 My 1 '15*  
 Polarity tester. *diag Engineer 118:550 D 11 '14; Same. Elec W 66:102 Ja 9 '15*  
 Portable car testing set. D. D. Ewing. *plan Elec Ry J 46:152 J1 24 '15*  
 Production of damped oscillations. L. O. Heath. *diags Gen Elec R 18:1110-17 D '15*  
 Proper construction of earth connections. G. H. Rettew. *Gen Elec R 18:904-7 S '15; Abstract. Engineer 120:482 N 12 '15*  
 Series of electrical tests made in 1883 and their influence on modern testing. A. L. Rohrer. *Gen Elec R 18:32-4 Ja '15*  
 Testing of potentiometers. F. Wenner and E. Weibel. *Il diags U S Bur Stand Bul 11:1-40 N 15 '14*  
 Voltage and insulation-resistance tests for wires of various sizes. *Elec W 66:1050 Ap 24 '15*  
 Voltage testing of cables. W. I. Middleton and C. L. Dawes. *Il diag Am Inst E E Pro 33:987-1008 Je '14; Abstract. Elec R & W Elec'n 66:32-3 J1 4 '14; Discussion. Am Inst E E Pro 34:70-8 Ja '15*  
*See also* **Dynamometers; Electric lamps, Tungsten—Testing; Electric measurement; Electric meters; Electric motors—Testing; Electric resistance; Electric transformers—Testing**

**Electric toasters**

- Electric toaster with rack for drying bread and keeping toast warm. *Il Elec W 66:1217 N 27 '15*

**Electric toys**

- Marketing of a new electrical toy. *Elec R & W Elec'n 67:980 N 27 '15*  
 Promoting electric cooking through the rising generation. *Il Elec W 66:1197-8 N 27 '15*  
 Recent developments in electrically operated toys. *Il Elec W 66:1214-17 N 27 '15*

**Electric tractors**

- Storage-battery-drive tractor. G. Boughner. *Munic Eng 49:150 O '15*

**Electric transformers**

- Abnormal voltages in transformers. J. M. Weed. *Am Inst E E Pro 34:1621-56 Ag '15*  
 Avoiding the no-load losses in transformers; abstract. B. Thierbach. *Elec W 66:1117-18 My 1 '15*  
 Bell-ringing, toy and sign-lighting transformers. *Il Elec R & W Elec'n 67:948 N 20 '15*  
 Bell-ringing transformers. *Il diags Elec R & W Elec'n 66:150-1 Ja 23 '15*  
 Care of transformers. *Elec W 66:1198 My 8 '15*  
 Cleaning transformer cooling coils. *Elec R & W Elec'n 67:568 S 25 '15*  
 Compounding transformers; abstract. L. Dreyfus. *Elec W 66:410 Ag 21 '15*  
 Constant-current transformer. J. A. Randolph. *diags Power 41:153-6 F 2 '15*  
 Current transformer. A. G. L. McNaughton. *Inst E E J 53:269-71 F 1 '15*  
 Delta-cross connections of transformers for parallel operation of two- and three-phase systems. G. P. Roux. *diags Am Inst E E Pro 34:1683-94 Ag '15*  
 Design of stationary transformers. S. Cabot and C. F. Cairns. *Elec W 66:459-63 Ag 23 '15*  
 Designing small transformers. N. G. Meade. *Power 41:262-3 F 23 '15*  
 Dimensions of transformers. A. R. Low. *bibliog diags Inst E E J 53:512-21 Ap 1 '15*  
 Drying high-tension transformers with steam heat. *diag Elec W 66:678 Mr 13 '15*  
 Drying large transformer units electrically. *Il Elec W 66:736-7 Mr 20 '15*  
 Effect of delta and star connections upon transformer wave forms. L. F. Curtis. *Am Inst E E Pro 33:1153-7 Ag '14; Discussion. 34:126-9 Ja '15*  
 Effect of third harmonic in voltage wave. R. C. Powell. *diags Elec W 66:157-8 Ja 16 '15*  
 Effects of frequency upon transformers. G. Fox. *diag Elec R & W Elec'n 66:89 Ja 9 '15; Same. Power 42:401 S 21 '15*  
 Emergency transformer connections. G. P. Roux. *Gen Elec R 18:332-5 Ag '15*

**Electric transformers—Continued**

- Form factor and its significance. F. Bedell, R. Bown and H. A. Pidgeon. *Am Inst E E Pro* 34:1051-8 Je '15; Abstract. *Elec W* 66:7 J1 3 '15
- Formula for checking operating temperature of water-cooled transformers. G. E. Armstrong. *Elec W* 66:1030 N 6 '15
- Fused transformer cut-out. *diag Elec W* 66:772 O 2 '15
- Harmonics in transformer magnetizing currents. J. F. Peters. *diags Am Inst E E Pro* 34:1657-73 Ag '15
- Mechanical forces in circuits carrying heavy currents; abstract. P. V. Hunter. *Elec W* 64:1259 D 26 '14
- Mechanical stresses in shell-type transformers. J. M. Weed. *II diags Gen Elec R* 18:60-4 Ja '15
- Million-volt transformer to be demonstrated at the Panama-Pacific exposition. N. Willson. *II Elec R & W Elec'n* 67:945-6 N 20 '15
- Miniature transformers. *II Elec W* 66:1221 N 27 '15
- Number system keeps track of transformers. *II Elec W* 66:190 J1 24 '15
- Open-circuited compensator. J. A. Horton. *diag Power* 41:617-18 My 4 '15
- Open delta connection for transformers. *Engineer* 120:262-3 S 10 '15
- Open-delta or V-connection of transformers. G. P. Roux. *Gen Elec R* 18:52-5 Ja '15
- Operation and design of auto-transformers. N. G. Meade. *diags Power* 41:804-6 Je 15 '15
- Operation of transformer used with 2 kw. 100,000 cycle alternator. S. P. Nixdorff. *Gen Elec R* 18:308-9 Ap '15
- Parallel operation of transformers; abstract. R. H. Willard. *diags Elec W* 66:76 J1 10 '15
- Phase angle of current transformers. C. L. Dawes. *Am Inst E E Pro* 34:927-40 My '15
- Phenomena accompanying transmission with some types of star transformer connections. L. N. Robinson. *Am Inst E E Pro* 34:1875-81 Ag '15
- Points to be considered when drying out transformers. *Elec W* 66:1208 N 27 '15
- Principal factors governing the choice of method of cooling power transformers as related to their first cost and operating conditions. W. S. Moody. *II Gen Elec R* 18:839-41 Ag '15
- Radiator-type transformers for the New Haven system. *II diags Elec W* 65:491-3 F 20 '15
- Report on switch and transformer oils. W. P. Digby. *Inst E E J* 53:146-56 Ja 1 '15; Abstract. *Elec W* 65:345-6 F 6 '15
- Series transformer for gas-filled tungsten street lamps. *II Elec R & W Elec'n* 66:38 Ja 2 '15
- Serving three-phase motor loads. R. E. Cunningham. *II diag Elec W* 66:588 S 11 '15
- Single-phase loads from polyphase systems. *Engineer* 120:185-6 Ag 20 '15
- Some transformer connections. G. Fox. *diags Power* 41:46-8 Ja 12 '15
- Transformer connections. A. A. Fredericks. *Power* 41:381-2 Mr 18 '15
- Transformer fuse block. *II Elec W* 65:178-9 Ja 18 '15
- Transformer stresses; abstract. W. B. Burnand. *Elec W* 66:541 S 4 '15
- Transformer winding. *diag Elec R & W Elec'n* 67:478-80 S 11 '15
- Transmission session of the Am. Inst. E. E. *Elec R & W Elec'n* 67:572-3 S 25 '15
- Voltage and current relations in open-delta-connected transformers. B. F. Jakobsen. *Elec W* 66:17-18 J1 3 '15
- Wiring a transformer bank from one end. *II Elec W* 66:254-5 J1 31 '15
- See also Electric current rectifiers; Electric currents; Electric distribution; Induction coils; Rotary converters

**Testing**

- Calibration of current transformers by means of mutual inductance. C. Fortescue. *diags pls Am Inst E E Pro* 34:1199-1215 Je '15
- Watt-hour meter method of testing instrument transformers. P. G. Agnew. *diags U S Bur Stand Bul* 11:347-57 My 10 '15; Summary. *Elec R & W Elec'n* 65:1146-7 D 12 '14

**Electric transmission**

- Analyzing electric waves for harmonics. C. W. Ricker. *II Elec W* 66:834-5 S 18 '15
- Bombay hydro-electric scheme. A. Dickinson. *maps diags plans Inst E E J* 53:693-714 My 15 '15; Discussion. 53:715-21, 802-4 My 15-Je 1 '15
- Calculation of the long distance transmission line under constant alternating voltage. G. R. Dean. *Am Inst E E Pro* 34:2241-62 O '15
- Central-station development at Portland, Me. *II diags Elec W* 65:590-6 Mr 6 '15
- Delta-cross connections of transformers for parallel operation of two- and three-phase systems. G. P. Roux. *diags Am Inst E E Pro* 34:1683-94 Ag '15
- Discussion on transmission lines. (See Proceedings for June and July, 1915) *Am Inst E E Pro* 34:3117-26 D '15
- Distributing potential over a string of insulators. J. L. Brennehan and H. M. Crothers. *diags Elec W* 64:1095-9 D 5 '14
- Effect of delta and star connections upon transformer wave forms. L. F. Curtis. *Am Inst E E Pro* 33:1153-7 Ag '14; Discussion. 34:125-9 Ja '15
- Electric service in and near Peoria, Ill. *II map Elec W* 66:281-5 Ja 30 '15
- Electric transmission of power. R. E. Argersinger. *II Gen Elec R* 18:454-9 Je '15
- Energy transmission work of 1914. L. Bell. *Elec W* 65:21-2 Ja 2 '15
- Engineering data relating to high-tension transmission systems; discussion. *Am Inst E E Pro* 34:284-99 F '15
- Experiments on the heating of screw-socket lampholders. C. C. Paterson. *II diags Inst E E J* 53:14-21 D 1 '14
- Flow of energy. R. A. Philip. *diags Am Inst E E Pro* 34:455-84 Ap '15; Same. *W Soc E J* 20:444-72 My '15; Same cond. *Engineer* 120:67-9 J1 16 '15; Same cond. *Power* 42:352-5 S 7 '15; Discussion. *W Soc E J* 20:472-7 My '15
- Four years' operating experience on a high-tension transmission line. A. Bang. *diag pls Am Inst E E Pro* 34:1425-45 J1 '15; Abstract. *Elec W* 66:10-11 J1 3 '15
- Future operation of long electric transmission lines. R. A. Philip. *II Eng N* 73:438-9 Mr 4 '15
- Georgia-Carolina company transmission system. *II diags Elec W* 66:1189-91 N 27 '15
- High-tension power transmission problems discussed at December A. I. E. E. meeting. *diags Elec Ry J* 44:1348 D 19 '14
- High-voltage transmission at high altitude. P. H. Thomas. *II diags plan Elec W* 65:29-34, 87-92 Ja 2-9 '15
- Hydroelectric development on Bishop Creek, Cal. C. O. Poole. *II diags map Elec W* 64:1045-7, 1093-4, 1143-7, 1193-6 N 28-D 19 '14
- Insulator performance from operating viewpoint. E. P. Peck. *II Elec W* 66:1077-9 N 13 '15
- Interconnected systems serving San Francisco; details of the generating equipments and transmitting circuits tied in with the larger system of the Pacific gas & electric company, which covers half of California. *II diags map Elec W* 65:1356-82 My 29 '15
- Interior wiring for lighting and power service. A. L. Cook. *Power* 41:702-6 My 25 '15
- Labor-saving transmission-line chart: calculating voltage drop on overhead alternating-current system. H. B. Dwight. *Elec W* 65:159-61 Ja 18 '15
- Long transmission lines completed by the Stone & Webster engineering corporation. R. A. Philip. *diags Elec R & W Elec'n* 65:1222-3 D 26 '14
- N. E. L. A. hydroelectric and transmission committee report. *Elec W* 65:1517-18 Je 12 '15
- Newcastle local section; chairman's address. P. V. Hunter. *diag Inst E E J* 53:102-6 D 15 '14
- One boiler room instead of fifty; Cabin Creek plant of the Virginia power company. *II diags Elec W* 66:236-81 Ag 7 '15
- 115,000-volt hydroelectric system in Japan. *II diags plan Elec W* 65:1593-1606, 1871-8 Je 19-26 '15

**Electric transmission—Continued**

- 150,000-volt transmission system: some operating conditions of the Big Creek development of the Pacific light & power corporation. E: Woodbury. *Il Am Inst E E Pro* 33: 1369-70 S '14; Discussion. 34:130-3 Ja '15
- Open-delta or V-connection of transformers. G: P. Roux. *Gen Elec R* 18:52-5 Ja '15
- Overhead construction work at Khopoli, Bombay, diags *Elec R & W Elec'n* 66:914-15 My '15
- Phenomena accompanying transmission with some types of star transformer connections. L. N. Robinson. *Am Inst E E Pro* 34:1675-81 Ag '15
- Protection and control of industrial electric power. C: P. Steinmetz. *Il Gen Elec R* 18: 979-85 O '15
- Sphere gap as a means of measuring high voltage; discussion. F. W. Peek, jr. *Am Inst E E Pro* 34:103-24 Ja '15
- Sphere gap discharge voltages at high frequencies; discussion. J. C. Clark and H. J. Ryan. *Am Inst E E Pro* 34:103-24 Ja '15
- Static electricity from transmission lines. C. O. Poole. *diag Elec W* 65:773 Mr '17
- Theoretical investigation of electric transmission systems under short circuit conditions. I. W. Gross. *Am Inst E E Pro* 34:25-69 Ja '15; Abstracts with discussion. *Elec R & W Elec'n* 66:126-7 Ja 16 '15; *Elec W* 65:163-4 Ja 16 '15; Discussion. *Am Inst E E Pro* 34: 2851-68 N '15
- Theory of electric waves in transmission lines. J. M. Weed. *diags Gen Elec R* 18:1148-53 D '15
- Thury system of direct current transmission. W: Baum. *bibliog Il diags map Gen Elec R* 18:1026-41 N '15
- Transmission line calculator. R. W. Adams. *diags Gen Elec R* 18:28-30 Ja '15
- Transmission-line construction for mountain districts. H. M. Somerville. *Il diag Elec W* 66:862-3 O 16 '15
- Transmission system of the electrified divisions. C. M. & St. P. Ry. R. E. Wade. *Il Ry R* 57:203-5 Ag 14 '15
- Trigonometric expressions for the phenomena occurring in long-distance transmission lines. V. Karapetoff. *Elec W* 66:857-60, 914-15 O 16-28 '15
- 200-mile artificial transmission line. C. E. Magnusson, J. Gooderham and R. Rader. *Il diags Elec W* 65:1545-9 Je 12 '15
- Wiring and conduit work at the Panama-Pacific exposition. A. A. Willoughby. *diag Elec R & W Elec'n* 67:432-5, 472-4 S 4-11 '15
- See also Electric conductors; Electric conduits; Electric distribution; Electric driving; Electric lines; Electric plants—Central stations; Electric plants—Substations; Electric power; Electric switches; Hydroelectric plants
- Electric transmission lines.** See **Electric lines**
- Electric trucks**
- Battery-service system. F. B. Rae, jr. *Elec R & W Elec'n* 67:454+ S 4 '15
- Eighteen electric vehicles displace forty horse-drawn units. *Il Elec W* 66:706-7 S 26 '15
- Electric trucks for Boston mail service. *Elec W* 66:338 Ag 14 '15
- Electric vehicles for hauling lumber and cotton; for freight handling; road making and garbage disposal. *Il Automobile* 31:1080-1 D 10 '14
- Electric vehicles in central-station service. *Il Elec R & W Elec'n* 66:293 F 13 '15
- Expansion of electric-vehicle business in Boston; mail delivery. *Il Elec R & W Elec'n* 67: 277-8 Ag 14 '15
- Increasing business with electric trucks by battery-service system. *Il diag Elec W* 66: 195-9 Jl 24 '15
- New York electric car campaign. *Elec R & W Elec'n* 67:970-1 N 27 '15
- Operating experience with electric pole trucks at Philadelphia. *Il Elec W* 65:1706 Je 26 '15
- Opportunity for electric vehicles in mail service. *Elec W* 65:566-7 F 27 '15
- Opportunity for the sale of electric; specific advantages for various industries. *Elec R & W Elec'n* 67:703-9 O 16 '15
- Performance of gas and electric trucks. W: J. Miller and S. G. Thompson. *Automobile* 35: 761-2 O 21 '15
- Purchase and care of the initial truck. G. D. Smith. *Elec R & W Elec'n* 67:261-2, 264 Ag 7 '15
- Saving with electric vehicles; equipment of the Curtis publishing company. *Il Elec W* 65: 1063-6 Ag 24 '15
- Tests on electric trucks in mail service at Denver, Col. *Elec W* 66:539 S 4 '15
- Twelve new commercial electric. *Automobile* 32:128-9 Ja 21 '15
- United States government uses many electric. *Il Elec R & W Elec'n* 65:1212 D 26 '14
- Versatility of the electric truck. *Il Elec W* 66: 481 Ag 28 '15
- Wagon with two-motor concentric-gear drive. *Il Elec W* 65:746 Mr 20 '15
- Cost of operation**
- Commercial electric truck operating costs. *Elec W* 65:667 F 27 '15
- Comparisons between horse, gasoline and electric delivery costs; summary of electric vehicle study by Massachusetts institute. H. F. Thomson. *Elec R & W Elec'n* 67:874+ N 6 '15
- Economy of the electric truck for delivering coal—unit costs compared. *Elec W* 66:1038 N 6 '15
- Garbage collection studies in Chicago justify continued use of horses. *Eng Rec* 72:52-3 Jl 10 '15
- Operating cost of a five-ton electric vehicle. *Elec R & W Elec'n* 67:470 S 11 '15
- Operating cost of commercial electric vehicles. W: P. Kennedy. *Elec W* 65:1316-22 My 22 '15; Discussion. 65:1532 Je 12 '15
- Operating costs of industrial electric trucks. *Elec R & W Elec'n* 67:872 N 6 '15
- Opportunity for the sale of electric; specific advantages for various industries. *Elec R & W Elec'n* 67:703-9 O 16 '15
- Savings through electric-vehicle operation at Wichita, Kan. *Elec W* 64:1253 D 26 '14
- Specifications**
- Specifications of 91 electric truck chassis for 1915. *Automobile* 32:130-1 Ja 21 '15
- Electric trucks, Municipal**
- Electric street sprinklers. *Il Elec W* 65:238 Ja 23 '15; Same. *Eng Rec* 71:117 Ja 23 '15
- Electric trucks in factories, freight terminals, etc.**
- Cost data for electric trucks in freight houses. *Eng Rec* 71:403 Mr 27 '15
- Crane-equipped storage battery truck. *Il Iron Age* 96:1173 N 13 '15
- Economy gained by handling freight with electric trucks at marine terminals. *Il Int Marine Eng* 20:124-5 Mr '15
- Edwards steel trucks. *Il Elec R & W Elec'n* 65:1231-2 D 26 '14
- Electric stevedore. A. J. Marshall. *Il Elec R & W Elec'n* 66:1084, 1088 Je 5 '15
- Electric trucking at the New York terminal of the Southern Pacific steamship company. *Il Int Marine Eng* 20:102 Mr '15
- Electric trucks in railroad freight houses. *Elec W* 65:1706 Je 28 '15
- Electrical appliances for workshops. *Il diag Engineer* 120:32-4 Jl 23 '15
- Electrical stevedores. M. C. Horine. *Il Eng M* 49:590-1 Jl '15
- Experience with a storage battery truck. *Iron Age* 96:631 S 2 '15
- Handling cotton with electric freight trucks at Galveston. *Il Int Marine Eng* 20:103-4 Mr '15
- Handling freight with storage battery trucks. *Il Ry Age* 57:1093-4 D 11 '14
- Pennsylvania railroad's industrial trucks; operating data and cost. T. V. Buckwalter. *Il Ry Age* 59:737-9 O 22 '15; Same. *Ry R* 57: 686-9 N 27 '15; Same cond. *Elec Ry J* 46: 864-6 O 23 '15
- Storage battery truck for factory use. *Il Iron Age* 95:1258 Je 10 '15
- Electric units**
- Constants for converting electrical units to horsepower. C: S. Ohrenscha. *Mach* 21:794 Je '15

**Electric units—Continued**

Kelvin for the unit of electric energy. W. B. Wallis. Elec R & W Elec'n 66:171 Ja 23 '15;  
Same. Power 41:172 F 2 '15  
See also Electric symbols

**Electric vehicle association**

Electric vehicle association of America; its influence on the present and future development of the industry. Elec R & W Elec'n 67:697-702 O 16 '15

Papers and discussion at Cleveland, Oct. 18-19. Elec R & W Elec'n 67:764-7 O 23 '15

6th annual convention, Cleveland, Oct. 18-19. Automobile 33:760 O 21 '15

6th annual convention, Cleveland, Oct. 18-19. 11 Elec W 66:902-4 O 23 '15

**Electric vehicle industry**

Battery rental systems as an aid to electric-vehicle development. Elec R & W Elec'n 67:793-4 O 30 '15

Educational value of sociability runs. A. J. Marshall. Elec R & W Elec'n 67:458 S 4 '15

Electric vehicle association meets. Elec R & W Elec'n 67:764-7 O 23 '15

Electric-vehicle topics discussed at San Francisco convention. Elec W 65:1649-50 Je 19 '15

Selling the electric vehicle. 11 Elec R & W Elec'n 65:1131 D 12 '14

Selling vehicles on the installment plan. 11 Elec W 66:856 O 16 '15

Training dealers to sell vehicles. Elec W 65:553 F 27 '15

**Electric vehicles**

Chicago electric announces price reduction and battery rental system. 11 Elec R & W Elec'n 67:641-2+ O 2 '15

Detroit electrics lower in price. 11 Automobile 33:280-1 Ag 12 '15

Electric car registrations increasing. Automobile 32:127 Ja 21 '15

Electric cars, 1915 models. 11 Automobile 32:132-43 Ja 21 '15

Electric vehicle operation—an actual service study. A. S. Wells. plan Elec R & W Elec'n 66:405-6+ Mr 6 '15

Electric vehicle reports. Automobile 32:35-6 Ja 14 '15

Interchangeable-battery system for electric vehicles. diags Elec W 64:1266 D 26 '14

Lightweight electric vehicle. Sci Am 112:346 Ap 10 '15

Milburn electrics in three models. 11 Automobile 31:1110-11 D 17 '14

New England question box convention. Elec R & W Elec'n 66:599-600 Mr 27 '15

1916-model electric passenger cars. 11 Elec W 66:824-5 O 9 '15

Osborn electricquette; electrically propelled chair. O. E. Thomas. 11 Gen Elec R 18:299-300 Ap '15

Vehicle maintenance. R. Macrae. Elec R & W Elec'n 66:397 F 27 '15

See also Electric buses; Electric tractors; Electric trucks; Electric vehicle industry; Garages, Electric; Motor cars (railroad)—Storage battery; Storage batteries—Charging; Taxicabs, Electric; Wheel chairs, Electric

**Control**

Electric vehicle control. Elec R & W Elec'n 66:495-6 Mr 13 '15

**Electric vehicles, Municipal**

Use of electric vehicles in municipal service. Elec R & W Elec'n 67:41-2 Jl 3 '15

**Electric vehicles and the central station**

Battery-exchange service in Boston. Elec R & W Elec'n 67:105 Jl 17 '15

Battery-service system. F. B. Rae, jr. Elec R & W Elec'n 67:454+ S 4 '15

Boosting electrics in New England. Elec W 66:448-9 Ag 23 '15

Comparative development of the commercial-power and electric-vehicle loads. Elec R & W Elec'n 67:876+ N 6 '15

Electric vehicle and the central station; abstracts. J. F. Gilchrist and A. J. Marshall. Elec R & W Elec'n 67:44, 46 Jl 8 '15; Elec W 65:1524-5 Je 12 '15

Electric vehicle as a business builder. Elec R & W Elec'n 67:710-12 O 16 '15

Electric vehicle situation in New England. Elec W 65:803-5 Mr 27 '15

Increasing business with electric trucks by battery-service system. 11 diag Elec W 66:195-9 Jl 24 '15

Opportunities for the central station in the electric-vehicle industry in 1915. J. F. Gilchrist. Elec W 65:9-10 Ja 2 '15

Review of the electric-vehicle field. W. P. Kennedy. Elec W 65:25-7 Ja 2 '15

Electric washing machines. See Washing machines, Electric

**Electric water heaters**

Electric immersion heater. 11 Elec W 66:1047 N 6 '15

Electric water heater for soda-fountain service. 11 Elec W 66:881 O 16 '15

Electricity for sterilizing purposes. W. B. Underwood. 11 Elec W 65:34 Ja 2 '15

Heat insulation of electric water heaters; abstract. A. Rittershausen. diag Elec W 66:651-2 S 13 '15

**Electric waves**

Abnormal voltages in transformers. J. M. Weed. Am Inst E E Pro 34:1631-56 Ag '15

Analytical and graphical solution for non-sinusoidal alternating currents. F. M. Mizushi. Am Inst E E Pro 34:1075-86 Je '15; Abstract. Elec W 66:8 Jl 3 '15

Analyzing electric waves for harmonics. C. W. Ricker. 11 Elec W 66:634-5 S 18 '15

Coolidge X-ray tube. R. Bown. 11 plan Elec W 65:396-7 F 13 '15

Direct-reading instrument for measuring the logarithmic decrement and wave length of electromagnetic waves. F. A. Kolster. 11 diags U S Bur Stand Bul 11:421-55 My 10 '15

Discussion on irregular wave shapes. (See Proceedings for June, 1915) Am Inst E E Pro 34:8087-8116 D '15

Distortion factors. F. Bedell, R. Bown and C. L. Swisher. Am Inst E E Pro 34:1059-73 Je '15; Abstract. Elec W 66:7-8 Jl 3 '15

Distortion of alternating current wave caused by cyclic variation in resistance. F. Bedell and E. C. Mayer. diags Am Inst E E Pro 34:177-86 F '15; Discussion. 34:2584-9 O '15

Effect of transient voltages on dielectrics. F. W. Peak, jr. 11 Am Inst E E Pro 34:1695-1747 Ag '15

Electric waves and oscillations; means of investigating the interior of the earth. G. Leibmarch. Sci Am S 79:154-5 Mr 6 '15

Form factor and its significance. F. Bedell, R. Bown and H. A. Pidgeon. Am Inst E E Pro 34:1051-3 Je '15; Abstract. Elec W 66:7 Jl 3 '15

Function of the earth in radio-telegraphy. J. A. Fleming. Sci Am S 79:29 Ja 9 '15

Harmonics in transformer magnetizing currents. J. F. Peters. diags Am Inst E E Pro 34:1657-73 Ag '15

Magnetic behaviour of iron under alternating magnetization of sinusoidal waveform. N. W. McLachlan. diags Inst E E J 53:809-19 Je 15 '15

Mathematical relationship between flux and magnetizing-current waves at high flux densities. A. L. Tackley. Inst E E J 53:521-5 Ap 1 '15

Production of damped oscillations. L. O. Heath. diags Gen Elec R 18:1110-17 D '15

Scientific work of Prof. J. C. Bose. J. Kunz. Sci Am S 79:291 My 8 '15

Theory of electric waves in transmission lines. J. M. Weed. diags Gen Elec R 18:1148-53 D '15

Velocity of Hertzian waves. H. E. Saunders. diags Sci Am S 80:21-2 Jl 10 '15

See also Electric currents, Alternating; Wireless telegraph

**Electric welding**

Answers to some questions on electric arc welding. J. F. Lincoln. Am Inst E E Pro 34:433-8 Mr '15; Same. Iron Tr R 56:623-4 Mr 25 '15; Same cond. Ry Age (Mech ed) 89:195 Ap '15; Discussion. Am Inst E E Pro 34:2941-6 D '15

**Electric welding—Continued**

- Arc welding and its application in the metal-working industry. J. F. Lincoln. Elec R & W Elec'n 66:1161-2 Je 19 '15; Same cond. Foundry 43:189-40 Ap '15; Excerpts. Iron Age 95:949 Ap 29 '15
- Automatically welded electric joints in Brooklyn. II Elec Ry J 44:1310 D 13 '14
- British chain welder. II Iron Tr R 57:272 Ag 5 '15
- Compact arc-welding outfit. II Elec Ry J 46:195 J 21 '15
- Constant current electric welder. II Ry Age (Mech ed) 89:490 S '15
- Costs of electric-arc welding. G. W. Cravens. Eng N 73:1084 Je 3 '15
- Electric-arc welding. II Eng & Min J 99:947-8 My 29 '15; Same. Power 42:27 J 6 '15
- Electric butt-welding practice. D. T. Hamilton. diags Mach 21:562-5, 680-3, 735-9 Mr-My '15
- Electric process for safe-ending tubes. L. R. Pomeroy. diags Ry Age (Mech ed) 89:469-70 S '15
- Electric welding. G. Fox. II diags Elec R & W Elec'n 67:117-19, 156-9, 204-6 J 17-31 '15
- Electric welding costs. J. H. Bryan. Ry R 56:187 F 6 '15
- Electric welding in boiler maintenance; report of committee of Master boiler makers' association. Ry Age (Mech ed) 89:312-13 Je '15; Same. Ry Age 58:1166-7 Je 4 '15
- Electric welding outfit of new design. II Iron Tr R 57:264 Ag 5 '15
- Electric welding with dynamotor sets. D. Durie. Elec Ry J 46:324 Ag 21 '15
- Folding box to guard the public eye against welding. R. P. Williams. II Elec Ry J 45:847-8 My 1 '15
- How a water-tube boiler was repaired by an electric weld. A. C. Lasher. Elec W 66:1207-8 N 27 '15
- Master blacksmiths' convention; discussion of electric welding. II diags Ry Age (Mech ed) 89:476-80 S '15
- Modern methods of electric welding and their application. H. S. Marquand. diags Inst E E J 53:851-6 Je 15 '15
- Modern practice in electrical arc welding. J. A. Randolph. II Foundry 43:16-17 Ag '15; Same. Iron Tr R 57:490-1 S 9 '15
- Percussive electric welding. D. T. Hamilton. II diags Mach 21:807-12 Je '15
- Power-driven spot welding machine. II Iron Age 96:85 J 8 '15
- Restoring steel wheel flanges with a welder. F. A. Murphy. II Elec Ry J 45:719-20 Ap 10 '15
- Seventy years of inventions. II Sci Am 112:513-19 Je 5 '15
- Thomson electric welding patents upheld. Elec W 66:361-2 O 16 '15
- Three new welding machines, by Agnew electric welder co., Detroit, Mich. II Iron Age 95:787 Ap 8 '15
- Toledo butt and spot welders. II Mach 21:673-4 Ap '15; Elec W 65:952 Ap 10 '15
- Welding shafts on special machine. II Iron Tr R 56:881 Ap 1 '15; Iron Age 95:736-7 Ap 1 '15
- Electric wire and wiring**
- American and foreign wiring rules. Elec W 64:1083 D 5 '14
- American versus continental wiring standards. H. K. Richardson. Elec W 65:1157 My 8 '15
- Bare concentric wire. R. S. Hale. Elec W 65:570-2 F 27 '15
- Changes in National electrical code. Elec W 65:878-80 Ap 3 '15
- Cheap house wiring. Elec W 65:204 Ja 23 '15
- Cheap wiring methods discussed. Elec W 64:1235 D 26 '14
- Cheaper electric wiring and the manufacturers of standard wiring devices. Elec R & W Elec'n 65:1201-2 D 26 '14
- Cheaper house wiring; description of the bare concentric wire. W. H. Blood, jr. Elec W 64:1134 D 12 '14
- Cheaper wiring. G. Welderman; J. A. Cavanaugh. Elec R & W Elec'n 66:81 Ja 9 '15
- Cheaper wiring. W. W. Lewin. Elec W 65:716 Mr 20 '15
- Cheaper wiring; views of authorities in England. Elec R & W Elec'n 66:242-4, 294-5 F 6-13 '15
- Concentric wire for interior lighting circuits. II Elec W 65:177 Ja 16 '15
- Concentric wire; one of the hazards. C. W. Abbott. Elec R & W Elec'n 66:353 F 20 '15; Same. Elec W 65:716-17 Mr 30 '15
- Concentric wiring. C. Wirt. Elec W 65:77-8 Ja 9 '15
- Concentric wiring. G. W. Borst. Elec W 65:516 F 27 '15
- Concentric wiring. L. Dolkart. Elec R & W Elec'n 66:545 Mr 20 '15
- Concentric wiring; abstract. D. S. Munro. II Elec W 66:411 Ag 21 '15
- Concentric wiring discussed. Elec W 66:445-6 Ag 28 '15
- Concentric wiring; discussion by electrical interests. Elec W 65:135-6 Ja 16 '15
- Concentric wiring in Great Britain. A. H. Seabrook. II Elec W 65:1156-7 My 8 '15
- Concentric wiring; possible dangers. R. B. Benjamin. Elec W 65:389-90 F 13 '15
- Concentric wiring; report by committee of National fire protection association. Elec R & W Elec'n 66:244 F 6 '15
- Concentric wiring; report of special committee of electrical interests. Elec R & W Elec'n 66:112-14 Ja 16 '15
- Concentric wiring rules; preliminary draft. Elec W 65:365-6 F 6 '15
- Conduit installation in gas-engine factory; plant of Woodward motor company. II Elec R & W Elec'n 66:583-4 Mr 27 '15
- Connector for electric wires. II Elec W 66:996 O 30 '15
- Cutting hole in plaster wall for distribution cabinet. A. Gorman. II Elec W 66:208 J 24 '15
- Elaborate temporary wiring installation; provisions for electric illumination of the outdoor performance of Siegfried given in the Harvard stadium at Cambridge, Mass. II Elec W 66:474-5 Ag 28 '15
- Electric wiring. G. C. Shaad. Elec W 65:1087-8, 1326-7 Ap 24, My 22 '15
- Electric wiring in new Bureau of engraving and printing, Washington. D. C. E. C. Stanton. II plan Elec W 66:688-9, 744-6 S 25-O 2 '15
- Electrical equipment rules. Colliery 35:673+ J 1 '15
- Electrical manufacturers discuss cheaper wiring. Elec R & W Elec'n 65:1226-7 D 26 '14
- Evolution of concentric wiring. S. E. Doane. Elec R & W Elec'n 66:489-90 Mr 13 '15; Same. Elec W 65:696-7 Mr 13 '15
- Feeder protective system. II diags Elec W 65:991-2 Ap 17 '15
- First installation of bare concentric wiring in America. II Elec W 66:796-8 O 9 '15
- German copper reserves in electric circuits. F. Loppé. Eng M 50:117 O 15
- Houses wired with concentric system in Boston. Elec R & W Elec'n 67:666 O 9 '15
- Installation of motors. M. F. Arloe. diags Elec R & W Elec'n 67:558-63 S 25 '15
- Interior wiring for lighting and power service. A. L. Cook. Power 41:601-5, 640-3, 666-71, 702-8, 736-8 My 4-Je 1 '15
- Interior wiring rules compared: an outline of the regulations followed in the United States, Germany and England. Elec W 64:1089-1108 D 5 '14
- Jumpers prevent service interruptions. II Elec W 66:590 S 11 '15
- Master-switch lighting circuits. V. N. Heath. diags Elec W 65:811-12 Mr 27 '15
- Meeting of N. E. L. A. wiring committee. Elec R & W Elec'n 67:972-3 N 27 '15
- Meeting of N. E. L. A. wiring committee. Elec W 65:897-8 Mr 13 '15
- Method of breaking off tubes. A. Gorman. diags Elec W 65:1707 Je 26 '15
- Modern methods of electrical wiring; abstract. D. S. Munro. Elec W 65:789 Mr 27 '15
- N. E. L. A. committee report on the wiring of existing buildings. Elec W 65:1523-4 Je 12 '15
- National electrical code amended at conference in New York city. Elec R & W Elec'n 66:624-3 Ap 3 '15
- National electrical code wiring rules compared with the German and English rules. Elec R & W Elec'n 65:1081-9 D 5 '14

**Electric wire and wiring—Continued**

- Opposition to overhead wiring rules of Idaho public utility commission. Elec W 64:1184-5 D 19 '14
- Pagrip metal molding and fittings therefor. Il Elec R & W Elec'n 66:788-7 Ap 24 '15
- Permanent and effective grounding of concentric wire. C. W. Abbott. Elec R & W Elec'n 66:446-7 Mr 6 '15
- Precautions to be observed in inserting cartridge fuses. T. H. Reardon. diags Elec R & W Elec'n 66:683-4 Ap 10 '15
- Proposed system of wiring. R. B. Benjamin. Elec R & W Elec'n 66:853-4 F 20 '15
- Questions and answers on the National electrical code. Published in the Electrical review and western electrician
- Resistance wires. R. F. Hunt. Metal Ind n s 13:420-1 O '15
- Running conductors to side outlets in finished-building wiring. T. Croft. diags Elec R & W Elec'n 65:1213-15 D 26 '14
- Safer and cheaper wiring systems. W. H. Blood, Jr. Elec W 65:76 Ja 9 '15
- Skin effect in bimetallic wires. J. M. Miller. Elec W 65:1612-13 Je 19 '15
- Small lighting consumer. J. R. Cravath. Elec W 65:148-9 Ja 16 '15
- Solving the difficulty of galvanic action between steel and copper spans. Elec W 65:610 Mr 6 '15
- Specification form for residence wiring. Elec R & W Elec'n 66:1194-6 Je 26 '15
- Standardization of plugs and receptacles. Il Elec W 65:667-8 F 27 '15
- Status of bare concentric wire. Elec W 66:1181-2 N 27 '15
- Substitutes for copper in Germany. Elec W 66:1040 N 6 '15
- Substitution of iron for copper wires in Germany, abstract. G. Dettmar. Elec W 66:218 Ja 23 '15
- Temperature rise in twin flexible wires. S. W. Melsom and H. C. Booth. diags Inst E E J 53:21-9 D 1 '14
- Underwriters passive on concentric wiring and refillable fuses. Elec W 65:831 Mr 27 '15
- Wiring an old frame building at \$3 an outlet. Il diag plans Elec W 65:240-3 Ja 23 '15
- Wiring and conduit work at the Panama-Pacific exposition. A. A. Willoughby. Il diags Elec R & W Elec'n 67:365-8, 422-5, 472-4 Ag 28-S 11 '15
- Wiring for colliery electric lighting; abstract. G. S. Corlett. Elec W 65:1426 My 29 '15
- Wiring layout for auxiliaries at Cleveland municipal plant. A. D. Williams. plan Power 42:296-7 Ag 31 '15
- See also* Electric cables; Electric conductors; Electric conduits; Electric distribution; Electric inspection; Electric lighting; Electric lines; Electric railroads—Wiring; Electric transmission; Insulation; Trolley wire
- Cost**
- Cost of wiring and conduit work. Elec R & W Elec'n 66:585 Mr 27 '15
- Labor costs in interior construction. L. W. Moxey, Jr. Elec W 66:924-7 O 23 '15
- Lynn house-wiring campaign; schedule of prices. Il Elec W 66:539-40 S 4 '15
- Terminology**
- Electric wire and cable terminology. Il U S Bur Stand Circ 37:1-13 '15
- Testing**
- Voltage and insulation-resistance tests for wires of various sizes. Elec W 65:1050 Ap 24 '15
- Electrical and gas association, Southwestern. See Southwestern electrical and gas association
- Electrical code, National. See National electrical code
- Electrical contractors' association of the state of Illinois
- Semi-annual convention, Chicago, Jan. 15 and 16. Elec R & W Elec'n 66:154 Ja 23 '15
- Electrical contractors' association of Wisconsin 12th annual meeting. Elec R & W Elec'n 66:152-3 Ja 23 '15
- Electrical development, Society for. See Society for electrical development

- Electrical engineers, American institute of. See American institute of electrical engineers
- Electrical inspectors, National association of. See National association of electrical inspectors
- Electrical propulsion. See Ship propulsion, Electric
- Electrical prosperity week**
- Arrangements for celebration. Elec W 66:1165-6 N 20 '15
- Campaign. Il Elec W 66:216, 508-9 JI 24, S 4 '15
- Celebration features of electrical prosperity week unique and interesting. Elec R & W Elec'n 67:981-2 N 27 '15
- Denver company conducts strenuous prosperity week campaign. Elec R & W Elec'n 67:970 N 27 '15
- Developments in plans for nation-wide celebration. Elec W 66:795 O 9 '15
- Electrical prosperity week districts. map Elec W 65:1849 Je 19 '15
- Electrical prosperity week—its mission—and how you can profit. Il map Elec R & W Elec'n 67:829-34 N 6 '15
- Meeting of the advisory committee. Elec R & W Elec'n 67:120 JI 17 '15
- National electrical week. S. M. Kennedy. Elec W 65:558-9 Mr 6 '15
- Plans. Elec R & W Elec'n 67:183 JI 24 '15
- Sectional committees. Elec W 65:1570-1 Je 12 '15
- Suggested national electrical week. Elec W 65:183, 276-8 Ja 16, 30 '15
- Suggestion advanced for a national electrical week. Elec R & W Elec'n 66:170 Ja 23 '15
- What the dealer and the contractor can do to cash in on electrical prosperity week. Elec It & W Elec'n 67:797-800 O 30 '15
- Your program for electrical prosperity week. E. E. Whitehorne. Il Elec W 66:515-18 S 4 '15
- Electrical safety code, National. See National electrical safety code
- Electrical supplies, Associated manufacturers of. See Associated manufacturers of electrical supplies
- Electrical supply jobbers' association**
- History and list of members. Elec R & W Elec'n 66:523-4 Mr 30 '15
- Summer meeting, Niagara Falls, Sept. 14-16. Elec W 66:623 S 18 '15
- Electricians**
- Electrician's registration bill becomes law in Massachusetts. Elec R & W Elec'n 66:1151-2 Je 19 '15
- Examination of electricians in Massachusetts. Elec R & W Elec'n 67:364 Ag 23 '15
- Massachusetts electricians' licensing bill. Elec W 65:1575 Je 12 '15
- Rules of New York city board for licensing electricians. Elec R & W Elec'n 67:606 O 3 '15
- Electricity**
- Analogies between electricity and mechanics. W. S. Franklin. Met & Chem Eng 13:317 My '15
- Dr. Edward Weston's achievements in the field of electricity. C. Hering. J Ind & Eng Chem 7:263-4 Mr '15
- Electricity of rain; abstract. G. C. Simpson. Elec W 66:261 JI 31 '15
- Future possibilities of electricity. C. Hering. Sci Am 113:400-4 D 4 '15
- Recent researches in electricity at the Bureau of standards. E. B. Rosa. Il plan J Fr Inst 180:539-59 N '15
- Static electricity in a textile mill. W. T. Estlick. Il Elec It & W Elec'n 67:231 Ag 7 '15
- See also* Armatures; Contact electricity; Dynamos; Electrons; Induction coils; Insulation; Ionization of gases; Ions; Lightning; Magnetism; Radioactivity; Telegraph; Telephone; Telpheage; Wireless telegraph; X rays; also headings beginning Electric and Electro
- Terminology**
- Standardization rules of the American institute of electrical engineers; approved by the board of directors, June 30th, 1915, to take effect July 1, 1915. Am Inst E E Pro 34:1933-2041 Ag '15
- See also* Electric symbols; Electric units; Electric wire and wiring—Terminology

- Electricity, Sale of.** See **Electric service companies**
- Electricity, Solar**  
Attempt to measure the free electricity in the sun's atmosphere. G. E. Hale and H. D. Babcock. *Sci Am* 113:183 Ag 28 '15
- Electricity in agriculture.** See **Electricity on the farm**
- Electricity in bakeries**  
1800 pies an hour: electrically operated machine. *Il Elec W* 65:419 F 13 '15  
**Electricity in bakeries.** *Il Elec R & W Elec'n* 66:715-21 Ap 17 '15
- Electricity in construction work**  
Diesel engine for the contractor—why not? H. D. Hammond. *Il Eng Rec* 71:409-10 Mr 27 '15  
**Electricity in Boston Tech building construction.** *Il Elec W* 65:1068-9 Ap 24 '15
- Electricity in foundries**  
Economics of motor drive. H. F. Stratton. *Iron Tr R* 55:527-30 + S 17 '14; Same cond. *Elec R & W Elec'n* 65:827-8 O 24 '14; Abstract. *Ind Eng* 14:408-6 O '14  
**Electrical construction in machine shops and foundries.** N. G. Meade. *diags Elec R & W Elec'n* 67:16-18 JI 8 '15  
**Industrial control in the foundry.** R. H. McLain. *Il Am Inst E E Pro* 34:587-97 Ap '15; Same. *Foundry* 43:201-3 My '15; Abstract, with discussion. *Elec R & W Elec'n* 66:777-8 Ap 24 '15; Discussion. *Am Inst E E Pro* 34:2984-96 D '15  
**Selection of electric motors and controllers.** S. H. Libby. *Foundry* 43:60-3 F '15  
See also **Electric furnaces**
- Electricity in horticulture.** See **Electrohorticulture**
- Electricity in mining**  
Central-station power in coal-mining operations. T. R. Ray. *Il Eng M* 48:833-48 Mr '15  
**Electrical developments in mining in 1914.** *Il Eng & Min J* 99:277-8 F 6 '15  
**Electrical equipment rules.** *Colliery* 35:678 + JI '15  
**Electricity applied to mining.** C. P. Sparks. *diags plans Inst E E J* 53:389-430; Discussion. 53:430-8, 649-76 Mr 15, My 1 '15  
**Electricity in a coal-handling plant.** R. M. Hale. *Il Elec R & W Elec'n* 65:1165-8 D 19 '14  
**Electricity in mining service.** *Elec W* 65:1226 My 15 '15  
**Energy supply on the Rand; abstract.** B. Price. *Elec W* 65:1683-4 Je 26 '15  
**Explosion-proof apparatus.** W. Baum. *Am Inst E E Pro* 34:2680-6 N '15  
**Influence of inflammable mine gas upon the design of motors for mine service.** H. H. Clark. *Am Inst E E Pro* 34:2686-9 N '15  
**Large electric hoist for Montana mine.** *Elec R & W Elec'n* 67:943-4 N 20 '15  
**Mine motors, with special reference to electric motors.** E. Drennen. *Colliery* 35:241-5 D '14  
**Mining loads for central stations.** W. Sykes and G. Bright. *Colliery* 35:477-9 Ap '15  
**Operations in the New River field.** W. Z. Price. *Il Colliery* 35:533-4 My '15  
**Permissible explosion-proof electric motors for mines; conditions and requirements for test and approval.** H. H. Clark. *Il U S Bur Mines Tech Pa* 101:1-14 '15  
**Power supply of the Central mining-Rand mines group.** J. H. Rider. *Il diags Inst E E J* 53:609-32; Discussion. 53:633-40, 736-43, 838-43 My 1-15, Je 15 '15  
**Safe use of electricity in coal mining.** W. M. Thornton. *Sci Am S* 78:398-400 D 19 '14  
**Shot firing in coal mines by electric circuit from the surface.** G. S. Rice and H. H. Clark. *Am Inst Min E Bul* 94:2563-71 O '14; Discussion. 100:385-91 Ap '15  
**Tom Hunter, hoisting engineer.** W. O. Rogers. *Il Power* 40:16-18, 188-90, 922-4 JI 7, Ag 4, D 29 '14  
**Tramming and hoisting at Copper Queen mine.** G. F. G. Sherman. *Il diags Am Inst Min E Bul* 105:1837-35 S '15  
**2400-volt railway of the Bethlehem-Chile iron mines company.** E. E. Kimball. *Gen Elec R* 18:12-14 Ja '15
- Use of electricity in mining work.** D. B. Rushmore. *Il Gen Elec R* 18:527-39 Je '15  
See also **Locomotives, Mine; Mining engineering; Mining machinery**
- Electricity in refrigeration**  
**Artificial ice plants operating in conjunction with small central stations.** H. Hechheimer. *Elec R & W Elec'n* 65:1168-9 D 19 '14  
**Electricity in a cold-storage plant.** *Il Elec R & W Elec'n* 67:357-9 Ag 28 '15  
**Making ice with purchased electric power.** C. A. Tripp. *Il Munic Eng* 43:294-6 My '15
- Electricity in the automobile industry**  
**Electricity in the automobile industry.** F. M. Kimball. *Gen Elec R* 18:550-2 Je '15
- Electricity in the home**  
**Chimneyless electrical suburb near Glasgow, Scotland.** *Il Elec W* 66:970 O 30 '15  
**Domestic uses of electricity around Boston.** *Il Elec W* 66:968-70 O 30 '15  
**Electric heating and heating appliances.** C. P. Randolph. *Il Gen Elec R* 18:523-6 Je '15  
**Electrical contractor who practices what he preaches.** *Il Elec R & W Elec'n* 67:431 S 4 '15  
**Electricity in the modern nursery.** *Il Elec W* 66:990 O 30 '15  
**Electricity on a country estate.** *Il Elec W* 66:476-8 Ag 28 '15  
**Home electrical at the Panama-Pacific international exposition.** D. C. Shafer. *Il plan Gen Elec R* 18:572-8 Je '15; Same cond. *Elec R & W Elec'n* 66:1041-3 Je 5 '15  
**What the customer wants to know concerning the cost of using appliances.** *Elec W* 66:980-1 O 30 '15  
See also **Electric bells; Electric cooking; Electric heating; Electric stoves; Electric toasters; Electric water heaters; Washing machines, Electric**
- Electricity in war**  
**Electricity in present-day warfare.** *Il Sci Am* 118:494 + D 4 '15
- Electricity on ships**  
**Application of electricity in naval warfare.** H. L. Hibbard. *Il Sibley J* 29:251-61 My '15  
**Electric heating as applied to marine service.** C. S. McDowell and D. M. Mahood. *Am Inst E E Pro* 33:861-72 Je '14; Discussion. 33:1891-5 D '14  
**Electrical equipment of a battleship.** H. A. Hornor. *Elec R & W Elec'n* 66:671-2 Ap 10 '15  
**Electrical equipment of the Argentine battleship Moreno.** H. A. Hornor. *Il diags Am Inst E E Pro* 33:1543-68 O '14; Summary. *Elec W* 64:752-8 O 17 '14; Discussion. *Am Inst E E Pro* 34:679-94 Ap '15  
**Electricity in marine work.** M. W. Day. *Il diag Gen Elec R* 18:504-22 Je '15  
**Electricity on board ship.** J. E. Bullard. *Int Marine Eng* 20:63-4 F '15  
**Electricity on board ship: the Aquitania's equipment.** J. Lowson. *Elec R & W Elec'n* 65:1189 D 19 '14  
**Latest developments in marine electrical engineering.** H. A. Hornor. *Int Marine Eng* 20:201-3 My '15  
**Scottish local section; chairman's address.** J. Lowson. *Inst E E J* 53:37-42 D 1 '14  
**Standard marine electrical installations.** H. A. Hornor. *Il diags Am Inst E E Pro* 34:1515-48 Ag '15  
**Use of electricity in ships.** *Sci Am S* 80:39 JI 17 '15  
See also **Ship propulsion, Electric**
- Electricity on the farm**  
**Analysis of central-station practice in Wisconsin regarding rural service.** *Elec R & W Elec'n* 66:237-9 F 6 '15  
**Application of electricity to agriculture.** *Il Engineer* 119:260-1 Mr 12 '15  
**Electric service on the farm.** *Elec R & W Elec'n* 67:178-9 JI 31 '15  
**Electricity in agriculture.** C. J. Rohrer. *Il Gen Elec R* 18:482-96 Je '15; Same. *Sci Am S* 80:264-6, 278-9 O 23-30 '15  
**Electricity in rural districts: threshing in an Iowa community.** *Il Elec R & W Elec'n* 66:148-9 Ja 23 '15  
See also **Electrohorticulture**

- Electricity supply**  
Centralization of London energy supply. *Elec W* 64:1137 D 12 '14  
Supply of the Netherlands with electric energy. *Elec R & W Elec'n* 67:30 J1 3 '15
- Electrification of railroads.** See Railroads—Electrification
- Electriqueques**  
Osborn electriqueque; electrically propelled chair. O. E. Thomas. *Il Gen Elec R* 18:399-300 Ap '15
- Electrocardiograph**  
Instrumental study of the heart. *Il Sci Am* 112:630-1+ Je 26 '15
- Electrochemical society, American.** See American electrochemical society
- Electrochemistry**  
American electrochemical society, San Francisco meeting, Sept. 16-17. *Elec R & W Elec'n* 67:625-8 O 2 '15  
American electrochemical society, 27th general meeting. *Elec R & W Elec'n* 66:821-4 My 1 '15  
American electrochemical society, 27th general meeting. *Elec W* 65:1108-10 My 1 '15  
American electrochemical society, 27th general meeting, Atlantic City. *Met & Chem Eng* 13:314-29 My '15  
Contributions of the chemist to the electrochemical industry. W. S. Landis. *J Ind & Eng Chem* 7:944 N '15  
Edward Weston's inventions. L. H. Baekeland. *por Sci Am S* 79:108-9 F 13 '15  
Electric synthesis of colloids. J. Mukhopadhyaya. *Am Chem Soc J* 37:292-7 F '15  
Electrochemical production of organic compounds. *Met & Chem Eng* 13:211-13 Ap '15  
Electrochemistry in America. *Met & Chem Eng* 13:1-9 Ja '15  
Electrochemistry in 1914. E. F. Roeber. *Elec W* 65:24-5 Ja 2 '15  
Measurement of oxidation potentials at mercury electrodes: the stannic-stannous potential. G. S. Forbes and E. P. Bartlett. *Am Chem Soc J* 36:2030-40 O '14  
Potential of silver against silver ion in concentrated solutions of potassium and of sodium chloride, and its relation to the activities of such solutions. G. S. Forbes and F. O. Anderegg. *Am Chem Soc J* 37:1876-85 J1 '15  
Studies of a new kind of e. m. f. R. Beutner. *diags Am Chem Soc J* 36:2040-59 O '14  
Year in the electrical industry. *Elec R & W Elec'n* 66:7 Ja 2 '15
- See also Chemistry, Physical; Dissociation; Electric batteries; Electric furnaces; Electrolysis; Electrolytes; Electrometallurgy; Ions; Passivity
- Electroculture of plants.** See Electrohorticulture
- Electrodes**  
Charged surface layers formed on the electrodes of vacuum tubes; abstract. K. T. Compton and L. W. Ross. *Elec W* 66:1210 N 27 '15  
Design, construction, and operation of electric furnaces. D. A. Lyon and J. F. Cullen. *diags U S Bur Mines Bul* 77:41-71 '14  
Electric furnace electrodes—their manufacture and use. C. A. Barnett. *Il diags Sibley J* 30:27-32 O '15  
Ferro-ilmenite arc on alternating-current circuits. L. Ladoff. *Elec R & W Elec'n* 66:871-2 My 3 '15  
Influence of the potassium ion upon the potential of the ferrocyanide-ferricyanide electrode; abstract. E. P. Schoch and W. A. Felsing. *Met & Chem Eng* 13:568-9 S 1 '15  
Measurement of oxidation potentials at mercury electrodes: the stannic-stannous potential. G. S. Forbes and E. P. Bartlett. *Am Chem Soc J* 36:2030-40 O '14  
Potential of silver against silver ion in concentrated solutions of potassium and of sodium chloride, and its relation to the activities of such solutions. G. S. Forbes and F. O. Anderegg. *Am Chem Soc J* 37:1876-85 J1 '15  
Potential of the rubidium electrode. G. N. Lewis and W. L. Argo. *diag Am Chem Soc J* 37:1983-90 S '15
- Reproducibility of the cadmium electrode.** F. H. Getman and V. L. Gibbons. *Il Am Chem Soc J* 37:953-70 My '15
- Electrodynamometer**  
Weston portable electro-dynamometer instruments. *Il Int Marine Eng* 20:523 N '15; *Elec Ry J* 46:387 O 18 '15
- Electro-filters**  
Improved diaphragm material—electro-filters. C. J. Thatcher. *Met & Chem Eng* 13:336-8 My '15
- Electrogalvanizing.** See Galvanizing
- Electrograph**  
Electric talking sign. *Elec R & W Elec'n* 66:1087 Je 5 '15
- Electrohorticulture**  
Electro-culture: a resumé of the literature. H. R. Hosmer. *Gen Elec R* 18:14-21 Ja '15; Same. *Sci Am S* 79:253-9 Ap 24 '15  
Electro-culture of the soil. *Sci Am S* 79:151 Mr 8 '15
- Electrolysis**  
Action of certain colloids on ions during electrolysis. A. Mutscheller. *diags Met & Chem Eng* 13:353-7 Je '15  
Adjustment of the direct electric lighting current to electro-analysis. E. J. Kaufman. *plan Met & Chem Eng* 13:524-5 S 1 '15  
Alternating current electrolysis. J. C. Ghosh. *diags Am Chem Soc J* 36:2333-46 N '14  
Anhydrous hydrazine; electrolysis of a solution of sodium hydrazide in anhydrous hydrazine. T. W. B. Welsh. *diag Am Chem Soc J* 37:497-508 Mr '15  
Battery assay of copper: report of subcommittee. *J Ind & Eng Chem* 7:546-7 Je '15  
Coagulation of albumin by electrolytes. W. D. Bancroft. *Met & Chem Eng* 13:317-18 My '15  
Copper leaching; discussion. L. D. Ricketts, and others. *Met & Chem Eng* 13:319-24 My '15  
Electro-analysis of the second group metals; abstract. E. P. Schoch and D. J. Brown. *Eng & Min J* 100:521 S 25 '15; Same. *Met & Chem Eng* 13:568 S 1 '15  
Electrolysis of copper sulphate liquors, using carbon anodes. L. Addicks. *Il diag Met & Chem Eng* 13:748-55 O 15 '15  
Electrolysis of solutions of the rare earths. L. M. Dennis and B. J. Lemon. *Am Chem Soc J* 37:131-7 Ja '15  
Electrolysis of solutions of the rare earths. L. M. Dennis and P. A. Van der Meulen. *Am Chem Soc J* 37:1963-76 S '15  
Electrolytic cell patents for the production of caustic soda and chlorine. *diags Met & Chem Eng* 13:815-16 N 1 '15  
Electrolytic endosmosis. H. G. Byers and C. H. Walter. *diags Am Chem Soc J* 36:2234-91 N '14  
Electrolytic method of sewage disposal. J. C. Olsen. *Il Met & Chem Eng* 13:785-9, 793-7 O 15-N '15  
Electrolytic precipitation of gold, silver and copper from cyanide solutions. G. H. Clevenger. *diags Met & Chem Eng* 13:803-6, 852-60 N 1-15 '15  
Electrolytic production of caustic and chlorine. *diag Met & Chem Eng* 13:506 Ag '15  
Electrolytic production of oxygen and hydrogen—a typical plant. *Il Elec R & W Elec'n* 66:1170-1 Je 19 '15  
Electrolytic separation of zinc, copper and iron from arsenic. A. K. Balls and C. C. McDonnell. *J Ind & Eng Chem* 7:26-9 Ja '15  
Gold precipitation on paper. D. Lay. *Eng & Min J* 100:276-7 Ag 14 '15  
Influence of an alternating current on electrolysis by a direct current. J. C. Ghosh. *diags Am Chem Soc J* 37:733-52 Ap '15  
Motion pictures of electrolysis. *Il Sci Am S* 80:340-1 N 27 '15  
Revision of the atomic weight of cadmium: the electrolytic determination of cadmium in cadmium chloride. G. F. Baxter and M. L. Hartmann. *Am Chem Soc J* 37:113-31 Ja '15  
Use of hydrofluoric acid in the separation of copper and lead from tin and antimony by means of the electric current. L. W. McCay. *Am Chem Soc J* 36:2375-81 N '14



**Electrolysis—Continued**

Zinc extraction by electrolysis. E. H. Leslie. Eng M 48:910-12 Mr '15

See also Electrochemistry; Electrodes; Electrolytes; Electrolytic corrosion; Electrometallurgy

**Electrolytes**

Coagulation of arsenious sulfide sol by electrolytes. J. Mukhopadhyaya. Am Chem Soc J 37:202-31 S '15

Conductivity and viscosity of solutions of electrolytes in formamid. P. B. Davis, W. S. Putnam and H. C. Jones. Il diags J Fr Inst 180:567-601 N '15

Distribution of an electrolyte between water and some second solvent and its dissociation constant in aqueous solution. H: J. M. Creighton. J Fr Inst 180:63-74 J1 '15

Improved diaphragm material—electro-filtros. C. J. Thatcher. Met & Chem Eng 13:336-8 My '15

Measurement of the conductivity of electrolytes; abstract. W. A. Taylor and H. L. Curtis. Elec W 66:187 J1 24 '15

Method for the calculation of the hydration of the ions at infinite dilution, and the ideal diffusion coefficient as applied to the hydro-diffusion of electrolytes. G: M. Smith. Am Chem Soc J 37:722-23 Ap '15

Relative migration velocities of the ions in complex electrolytes. A. Mutscheller. Met & Chem Eng 13:439-42 J1 '15

Sensitive criterion of the precision and of constant errors in the conductance data of weak electrolytes, the determination of the molar conductance of organic electrolytes at zero concentration and a study of the correction for the specific conductance of the conductivity of water. C. G. Derick. Am Chem Soc J 36:2368-83 N '14

Solution stratification as an aid in the purification of electrolytes. F. R. Pyne. diag Met & Chem Eng 13:895-6 D 1 '15

See also Electric batteries; Electrochemistry; Electrodes; Electrolysis; Ions; Storage batteries

**Electrolytic corrosion**

Causes of corrosion of water pipes and other underground structures. W. W. Cole. Elec Ry J 45:186 Ja 23 '15

Corrosion of metals in natural soils. El. H. Scofield and L. A. Stenger. Il Elec Ry J 44: 1092-5 N 14 '14; Same cond. Eng M 48:588-91 Ja '15; Discussion. Elec Ry J 45:419-21 F 27 '15

Earth resistance and its relation to the electrolysis of underground structures. B. McCollum and K. H. Logan. J Fr Inst 180:814-15 N '15

Effects of electrolysis on engineering structures. A. F. Ganz. Elec Ry J 46:624-5 S 25 '15

Electrolysis—its detection and mitigation. B. McCollum. Elec R & W Elec'n 66:259-60 F 6 '15

Electrolysis mitigation. Am Gas Light J 103: 129-30 Ag 30 '15

Electrolysis mitigation. Am Gas Light J 103: 268 O 25 '15

Electrolysis mitigation in Springfield and New Elyria, Ohio. Elec R & W Elec'n 67:435 S 4 '15

Electrolysis of reinforced concrete. Am Gas Light J 101:864 D 7 '14

Electrolytic action of return currents. H. El. Yerbury. Engineer 119:254 Mr 12 '15

Electrolytic corrosion in pipes. Metal Work 84:302 S 3 '15

Electrolytic corrosion of iron in soils. B. McCollum and K. H. Logan. U S Bur Stand Tech Pa 25:1-69 '13; Abstract. J Fr Inst 180: 228-32 Ag '15

Galvanic corrosion damages hull of yacht. Eng N 74:522-3 S 9 '15

Insulation of underground piping. Elec R & W Elec'n 67:194 J1 31 '15

Mitigation of destructive effects of electrolysis on reinforced concrete, underground pipes and cable sheaths. Eng & Contr 42:291-5 S 23 '14

Overhead electrolysis and porcelain strain insulators. S. L. Foster. Il Am Inst E E Pro 34:1549-58 Ag '15; Abstract. Elec Ry J 46: 582-3 S 18 '15

Paints to prevent electrolysis in concrete structures. H: A. Gardner. Il J Fr Inst 179: 313-36 Mr '15; Same. J Ind & Eng Chem 7: 504-10 Je '15; Same cond. Iron Tr R 57: 139-40+ J1 '15; Abstracts. Eng N 73:136-7 Ja 21 '15; Eng Rec 71:465-6 Ap 10 '15; Am Soc M E J 37:297 My '15; Concrete Cem 6: 310 Je '15

Preventing corrosion from electrolytic action. Power 41:740-Je 1 '15

Springfield (Mass.) electrolysis report. J. T. Harmer. Elec Ry J 45:507-8 Mr 13 '15

Tests show satisfactory return-circuit conditions in Providence, R. I. Elec Ry J 46:825-6 O 16 '15

See also Concrete, Effect of electricity on  
Electromagnetic separation of ores. See Magnetic separation of ores

**Electromagnetism**

Developments in electromagnetism. E. Bloch. Sci Am S 79:338-9, 366-8 My 29-Je 5 '15

Electromagnetic radiation from the viewpoint of the electron theory. J. P. Minton. diags Gen Elec R 18:387-97 My '15

See also Electromagnets; Magnetization

**Electromagnets**

Calculation of electromagnet windings. E. El. George and H. Pender. Elec W 65:529-31 F 27 '15

Electro-magnet for removing particles of iron from the flesh. Il Mach 21:601 Mr '15; Elec R & W Elec'n 66:508 Mr 13 '15; Iron Age 95: 452 F 25 '15; Iron Tr R 56:525 Mr 11 '15; Sci Am S 79:168 Mr 13 '15

Electromagnets for alternating-current circuits. N. G. Meade. diags Power 41:14-16 Ja 5 '15; Correction. 41:203 F 9 '15

Experiments with a plunger electromagnet; determining the pull on the plunger when it is in motion. B. C. Batcheller. diag Elec W 65:1037-9 Ap 24 '15

Magnetization of iron at high flux density with alternating currents. J. S. Nicholson. Inst E E J 53:248-57; Discussion. 53:257-63 F 1 '15

Solenoid and electromagnet windings. G: L. Hedges. Am Inst. E E Pro 34:2595-614 N '15

See also Armatures; Commutators; Induction coils

**Charging**

Recharging magneto magnets. R. J. Everest. Il Automobile 32:414-15 Mr 4 '15

**Electrometallurgy**

Electric furnace and the melting of alloys. R. S. Wile. Iron Age 95:1068-9 My 13 '15

Electric furnace in metallurgical work. D. A. Lyon, R. M. Keeney, and J. F. Cullen. bib-log diags U S Bur Mines Bul 77:1-207 '14

Electricity in an ore-treating plant. Il Elec R & W Elec'n 66:481-4 Mr 18 '15

Electrolysis of copper sulphate liquors, using carbon anodes. L. Addicks. Il diag Met & Chem Eng 13:748-55 O 15 '15

Electrolytic antimony refining. A. G. Betts. Met & Chem Eng 13:848-51 N 15 '15

Electrolytic copper refining; abstracts of papers by A. C. Clark and L. Addicks. Met & Chem Eng 13:661-2 O 1 '15

Electrolytic precipitation of gold, silver and copper from cyanide solutions. G. H. Clevenger. diags Met & Chem Eng 13:803-6, 852-60 N 1-15 '15

Electro-metallurgical industries as possible consumers of electric power. D. A. Lyon and R. M. Keeney. Am Inst Min E Bul 104: 1707-30 Ag '15; Excerpts. Iron Age 96:360-2 Ag 12 '15; Discussion. Am Inst Min E Bul 108:2502-7 D '15

Hydro-electrolytic treatment of copper ores. R. R. Goodrich. Il Am Inst Min E Bul 104: 1551-94 Ag '15

Iron manufacture by electrolysis: methods commercially carried out in France. L. Guillet. Il Iron Age 94:1390-2 D 17 '14; Same. Sci Am S 79:70-1 Ja 30 '15

**Electrometallurgy—Continued**

- Making use of segregation in electrolytic tank. Eng & Min J 100:356 Ag 28 '15  
 Modern methods for producing and refining various metals. J. W. Richards. Sci Am S 79:378-9, 398-9 Je 12-19 '15  
*See also* Cyanide process; Electric furnaces; Electrochemistry; Electrolysis; Electrolytic corrosion; Electroplating; Electrostatic separation of ores; Electrotyping; Magnetic separation of ores; Metallurgy; Smelting; Electric

**Bibliography**

- Electric furnace in metallurgical work. D. A. Lyon, R. M. Keeney, and J. F. Cullen. U S Bur Mines Bul 77:190-207 '14

**Electrometer**

- Highly sensitive electrometer; abstract. A. L. Parson. Elec W 66:1211 N 27 '15  
 Vibration electrometer. H. L. Curtis. diags U S Bur Stand Bul 11:535-52 My 27 '15; Excerpts. Sci Am S 79:330 My 22 '15; Abstract. Elec R & W Elec'n 66:606-7 Mr 27 '15

**Electromotive force**

- Hydrogen- and hydroxyl-ion activities of solutions of hydrochloric acid, sodium and potassium hydroxides in the presence of neutral salts. H. S. Harned. diags Am Chem Soc J 37:2460-82 N '15  
 Liquid junction potentials. D. A. MacInnes. Am Chem Soc J 37:3301-7 O '15  
 Potential of silver in nonaqueous solutions of silver nitrate. V. L. Gibbons and F. H. Getman. bibliog diags Am Chem Soc J 36:1630-55 Ag '14  
 Reducing power of photographic developers as measured by their single potentials. F. C. Frary and A. H. Nietz. diags Am Chem Soc J 37:2246-53 O '15  
 Shape of the pressure wave in electrical machinery. S. P. Smith and R. S. H. Boulding. diags Inst El E J 53:205-38; Discussion. 53: 238-47, 323-5 F 1-15 '15  
 Studies of a new kind of e. m. f. R. Beutner. diags Am Chem Soc J 36:2040-59 O '14  
*See also* Concentration cells; Passivity

**Electrons**

- Application of the electron theory to various phenomena. J. P. Minton. bibliog Gen Elec R 18:287-95 Ap '15  
 Atoms, molecules and electrons. N. W. Rakestraw. Sci Am S 80:254-6 O 16 '15  
 Criticism of the electron conception of valence. R. F. Brunel. Am Chem Soc J 37:709-22 Ap '15  
 Decrease of velocity of swiftly moving electrified particles in passing through matter; abstract. N. Bohr. Elec W 66:1042 N 6 '15  
 Developments in electromagnetism. El. Bloch. Sci Am S 79:338 My 29 '15  
 Electromagnetic radiation from the viewpoint of the electron theory. J. P. Minton. diags Gen Elec R 18:387-97 My '15  
 Electron conception of valence: inorganic compounds. J. M. Nelson and K. G. Falk. Am Chem Soc J 37:274-86 F '15  
 Electron conception of valence: the theory of electrolytic dissociation and chemical action. K. G. Falk and J. M. Nelson. Am Chem Soc J 37:1732-48 J '15  
 Electron theory and metallic selenium crystals. Elec W 64:1152 D 12 '14  
 Electron theory of electric conduction in metals. J. P. Minton. Gen Elec R 18:204-9 Mr '15  
 Electronic conception of positive and negative valences. H. S. Fry. Am Chem Soc J 37:2368-73 O '15  
 Electronic theories of the properties of metals. C. H. Lees. Sci Am S 80:320 N 13 '15  
 Interpretations of some stereochemical problems in terms of the electronic conception of positive and negative valences. H. S. Fry. Am Chem Soc J 37:855-92 Ap '15  
 Magnetron theory of atomic structure; abstract. D. L. Webster. Elec W 66:593-600 S 11 '15  
 Pure electron discharge and its applications in radio telegraphy and telephony. L. Langmuir. diags Gen Elec R 18:327-39 My '15  
 Theory of valency and molecular structure. W. C. Arsem. Am Chem Soc J 36:1655-75 Ag '14  
*See also* Cathode rays; Ions; Radioactivity

**Electrophysics**

- Application of the electron theory to various phenomena. J. P. Minton. bibliog Gen Elec R 18:287-95 Ap '15  
 Cathode rays and their properties. J. P. Minton. diags Gen Elec R 18:118-25 F '15  
 Characteristics of cathode ray tubes. J. P. Minton. diags Gen Elec R 18:836-40 J '15  
 Electromagnetic radiation from the viewpoint of the electron theory. J. P. Minton. diags Gen Elec R 18:387-97 My '15  
 Electron theory of electric conduction in metals. J. P. Minton. Gen Elec R 18:204-9 Mr '15

- See also* Electric currents, Alternating; Electric precipitation; Electric units; Electric waves; Electrochemistry; Radioactivity; Radiography

**Electroplaters' society, American. See American electroplaters' society****Electroplating**

- Action of certain colloids on ions during electrolysis. A. Mutscheller. diags Met & Chem Eng 13:353-7 Je '15  
 Bronzing processes suitable for brass and copper. T. I. Baker. Metal Ind n s 13:464-5 N '15 (to be cont)  
 Cleaning and plating in the same solution. O. P. Watts. Metal Ind n s 13:244-7 Je '15  
 Copper cyanide plating solutions. M. C. Weber. Metal Ind n s 13:95-6 Mr '15; Same. Met & Chem Eng 13:255-6 Ap '15; Same. Foundry 43:197-8 My '15; Same. Sci Am S 79:302 My 8 '15  
 Demonstration of metal cyanides at Lewis institute, Chicago, Ill. il Metal Ind n s 13: 124 Mr '15  
 Determining weight of deposit. L. C. Wilson. il Metal Ind n s 13:206-7, 335-7, 505-6; 13: 152-4, 277-8 My, Ag, D '14, Ap, J '15 (to be cont)  
 Digest of electrochemical U. S. patents prior to 1903. Publishing in Metallurgical and chemical engineer beginning with April, 1914  
 Economy and efficiency of copper cyanide. C. H. Proctor. Foundry 43:199-200 My '15  
 Efficiency, standardization's double. Metal Ind n s 13:379-80 S '15  
 Electrolytic lead deposits. F. C. Mathers and A. McKinney. Met & Chem Eng 13:328 My '15  
 Electroplaters' convention, June 3-5, Dayton, O. C. H. Proctor. Metal Ind n s 13:223-5 Je '15  
 Electro-plating with cobalt. C. H. Buchanan and T. Haddow. Metal Ind n s 13:240-2 Je '15  
 Electroplating with cobalt. H. T. Kalmus, C. H. Harper, and W. L. Savell. J Ind & Eng Chem 7:379-99 My '15; Excerpts (Conclusions). Met & Chem Eng 13:328-9 My '15; Elec R & W Elec'n 66:373 My 8 '15; Summary. Eng M 49:432-3 Je '15  
 French process for electroplating mirrors with copper. il Elec R & W Elec'n 66:322-3 My 15 '15  
 Making the silver solutions. O. A. Hillman. Metal Ind n s 13:416-17 O '15  
 Modern acid-dipping, electroplating and japanning plant. H. N. Trumbull. il Gen Elec R 18:1121-6 D '15  
 Modern plating equipment and supplies. H. S. Thompson. Metal Ind n s 12:153-4, 515 Ap, D '14  
 New form of electroplating barrel. il Iron Age 96:979 O 28 '15  
 Polishing and plating room practices reviewed. F. W. Hobbs. Metal Ind n s 13:414-15 O '15  
 Preparation and operation of all lead plating baths. F. C. Mathers. Metal Ind n s 13:184-5 My '15  
 Proper use of ammeter and voltmeter in the plating room. Metal Ind n s 13:67-8 F '15  
 Relative migration velocities of the ions in complex electrolytes. A. Mutscheller. Met & Chem Eng 13:439-42 J '15  
 Removing grease by electricity; the modern way to prepare metal articles for plating operations. T. Brown. Metal Ind n s 13: 192-4 My '15  
 Testing of electro-plating solutions. diags Metal Ind n s 13:20-1 Ja '15

**Electroplating—Continued**

Twentieth century electro-plating plant; Spirella company's Niagara Falls, N. Y., installation. G. W. Grupp. *Il Metal Ind* n s 13: 331-2 Ag '15

Unit energy consumption in electroplating establishment. *Il Elec W* 68:804 O 9 '15

Voltmeter and ammeter in the plating room. S. E. Huenerfauth. *Metal Ind* n s 13:71 F '15

*See also* Electrometallurgy; Galvanizing; Nickel plating; Silver plating

**Electroscope**

Practical methods for the determination of radium. S. C. Lind. *Il diag J Ind & Eng Chem* 7:406-10 My '15

Electrostatic potential and synchronism indicators. *Il Elec Ry J* 48:326 Ag 21 '15; *Elec R & W Elec'n* 67:251-2 Ag 7 '15; *Elec W* 68: 310-11 Ag 7 '15; *Power* 42:271-2 Ag 24 '15

**Electrostatic separation of ores**

Electrostatic ore separation. I. C. Clark. *Eng & Min J* 98:264-7 Ag 8 '14; *Same*. *Sci Am S* 80:173-4 S 11 '15; *Same cond*. *Eng M* 48: 108-8 O '14

**Electrotherapeutics**

*See also* Radiotherapy

**Electro-thermostatic control**

Electro-thermostatic control of radiators. *Sci Am* 113:364+ Ap 17 '15

**Electrotyping**

Preliminary circular of information regarding testing of electrotyping solutions issued by the Bureau of standards. *Inland Ptr* 54:391-2 D '14

Regulation of electrotyping solutions. *diag U S Bur Stand Circ* 53:1-12 '15; *Abstract. Met & Chem Eng* 13:258-60 Ap '15

*See also* Stereotyping

**Elements, Chemical. See Chemical elements****Elephant Butte dam**

Closure made at Elephant Butte dam, New Mexico. *Eng Rec* 71:274 F 27 '15

Concrete methods and records, Elephant Butte dam. E. H. Baldwin. *diag Eng N* 74: 695-8 O 7 '15

Excavation for foundation of Elephant Butte dam. E. H. Baldwin. *Il diag plan Eng N* 73:49-54 Ja 14 '15

Placing masonry for the Elephant Butte dam, New Mexico. E. H. Baldwin. *Il diag Eng N* 74:645-9 S 80 '15

**Elevated railroads**

Derrick car for elevated-railway reconstruction. J. M. Ryan. *Il diag Eng N* 73:986-7 My 20 '15

Design of steel elevated railways, N. Y. rapid transit system. M. E. Griest. *Il diag Eng N* 73:971-7 My 20 '15

Full-load secondary stresses in elevated railway bents. L. R. Manville. *Eng N* 74:949-51 N 11 '15

How some problems in the New York elevated improvement work were solved. *Il diag Eng Rec* 71:781-3 Je 19 '15

Laying new track under an old elevated railway platform. *diag Eng N* 73:1180-1 Je 17 '15

Mile and a half of track on New York elevated line rebuilt in fourteen days. *Il Eng Rec* 72:368-4 S 18 '15

Ornamental concrete elevated railway, New York city. M. E. Griest. *Il diag Eng N* 74: 913-18 N 11 '15

Railroad building under and over the streets of New York. *Il map Sci Am* 118:142-3+ Ag 14 '15

Rapid steel erection on third track work, Second avenue elevated, New York. *Il diag Eng Rec* 71:86-7 Ja 18 '15

Rebuilding elevated railways in New York city. *Il diag plan map Eng N* 74:625-30, 683-7 S 80-O 7 '15

Safety of trains on the Chicago elevated. *Il Elec Ry J* 46:302-5 Ag 21 '15

Section of New York elevated rebuilt under heavy traffic without an accident. *Il map Eng Rec* 72:470-3 O 16 '15

Temporary support for an elevated-railway bent. H. L. Dlyn. *Il Eng N* 74:122-3 J1 15 '15

Track-raising in building a hump station, New York elevated lines. *Il diag Eng N* 74: 269-71 Ag 5 '15

Typical and special construction used on Queens extension to New York elevated. *Il diag Eng Rec* 72:76-8 J1 17 '15

Word about elevated railroads in general. *Elec Ry J* 45:71-2 Ja 2 '15

**Stations**

Architectural treatment of special elevated stations of the dual system, New York city. S. J. Vickers. *Il Am Inst Arch J* 3:501-2 N '15

Stations for third track, New York elevated, placed above existing platforms. *Il diag Eng Rec* 72:138-9 J1 31 '15

**Elevator lobbies**

Types of elevator lobbies in office buildings. C. F. Baker. *Il plans Arch Rec* 38:331-40 D '15

**Elevators**

Elevator-rail greaser. *diag Power* 41:82-3 Ja 19 '15

Hydraulic elevators shut down by broken gate valve. *diag Eng N* 74:574 S 16 '15

Notes on elevator pumps. T. J. Rogers. *diag Power* 41:741-2 Je 1 '15

Seventy years of inventions. *Il Sci Am* 112: 515 Je 6 '15

*See also* Hoisting machinery

**Safety devices**

Maximum rate of safe retardation for passenger cars and elevators. *Eng N* 72:1132-3 D 3 '14

Sixth award of the Scientific American medal for safety devices. W. H. Tolman. *Il Sci Am* 113:174 F 20 '15

When the elevator runs away. *Il Sci Am* 113: 274 S 25 '15

**Elevators, Electric**

Automatic electric elevator dispatcher. N. G. Meade. *diag Power* 41:540-1 Ap 20 '15

Characteristics of direct-current motors for elevator service. A. Brunt. *Il Am Inst E E Pro* 34:2767-82 N '15

Electric elevator. H. D. James. *Am Inst E E Pro* 34:3008-11 D '15

Electric elevators, operation and maintenance. A. C. Bender. *Il diag Elec R & W Elec'n* 68:947-52, 985-9, 1080-2 My 22-Je 5 '15

Line disturbance caused by special squirrel-cage and wound-rotor motors when starting elevators and hoists. J. C. Lincoln. *diag Am Inst E E Pro* 34:421-31 Mr '15; *Discussion*. 34:2847-60 N '15

Modern electric elevator and elevator problems. D. Lindquist. *Il diag Am Soc M E J* 37:309-24 Je '15; *Abstracts*. *Power* 41:656-7 My 11 '15; *Elec W* 65:1011-12 Ap 17 '15; *Discussion*. *Am Soc M E J* 37:324-33 Je '15

Rational basis of comparison of the duties of electrical elevators and hoisting engines. A. M. Coyle. *Am Soc M E J* 37:395-400 J1 '15

**Elevators, Grain. See Grain elevators****Elevators, Inclined**

Inclined elevators increase economy of marine terminals. *Il Int Marine Eng* 20:119 Mr '15

**Elgin, Illinois****Water supply**

Experience with artesian well water. R. R. Parkin. *Am Water Works Assn J* 2:407-9 Je '15

**Elliot, Charles William, 1834-**

Appreciation. M. Benjamin. *por Sci Am S* 78: 411 D 26 '14

**Ellen Wilson memorial homes, Washington, D. C.**

Town planning and housing. G. B. Ford. *Il plans Am Inst Arch J* 3:352-7 Ag '15

**Ellipses**

Method of drawing an ellipse. A. W. Schoof. *diag Mach* 21:496-7 F '15

Simple method of drawing ellipses. *diag Eng & Min J* 99:1080 Je 19 '15

**Elm trees**

Hickories, elms and ash trees. W. H. Miller. *Il Am For* 21:719-29 Je '15

**Eultrators**

Air analyzer for determining the fineness of cement. J. C. Pearson and W. H. Sligh. *Il diags* U S Bur Stand Tech Pa 48:1-74 '15; Summary. *J Fr Inst* 179:712-14 Je '15; Summary. *Eng Rec* 71:737 Je 12 '15

**Embankments**

Building the earth embankment for Hill View reservoir. A. W. Tidd. *Il plan* Eng N 74: 500-5 S 9 '15  
Cutoff-wall and rock grouting at the Milton reservoir embankment. *Il diags map* Eng N 73:468-71 Mr 11 '15  
Earth embankment and fill at Shopton, Iowa. *Il plan* Eng N 72:1172-3 D 10 '14  
Earth fill replaces trestle for irrigation canal. *Il diags* Eng Rec 71:525-6 Ap 24 '15  
London county hall. *diags* Engineer 120:147-8 Ag 13 '15  
Railroad subgrade troubles—preventives and cures. J. T. Bowser. *Eng Rec* 72:203-4 Ag 14 '15  
Simple construction reclaims 7000 acres of rich land at low cost, Pitt Meadow, B. C. H. M. Burwell. *Il diag map* Eng Rec 72:330-1 S 11 '15

See also Sea walls

**Embargo**

British wool embargo. *Textile World* 48:559-63 Mr '15  
Details of rubber embargo lifting. *Horseless Age* 35:222-3 F 17 '15

**Embezzlement**

Defalcations. L. U. Crawford. *J Account* 20: 112-21 Ag '15

**Embossing (typography)**

Electrically heated embossing block. *Il Elec W* 66:995 O 30 '15  
Emboss sales company protests. W. B. Westlake. *Inland Ptr* 54:357-8 D '14  
Outgrowths of letterpress. G. Sherman. *diag* Inland Ptr 54:197-200, 343-6 N-D '14

**Embroidery patterns**

Outgrowths of letterpress: transfer and perforated embossing patterns. G. Sherman. *Il Inland Ptr* 54:343-6 D '14

**Emery**

Emery around a dynamo. B. J. Oppenheim. *Power* 41:275-6 F 23 '15  
Emery around a dynamo. W. Weaver. *Power* 40:855 D 15 '14

See also Grinding and polishing

**Emery wheels**

Constructing emery wheel exhaust heads. *diags* Metal Work 82:787-9 D 13 '14  
Emery tool grinder for patternmakers. C. Murphy. *diag* Foundry 43:300 Ag '15  
New safety hood for emery wheels. *Il Iron Age* 95:244 Ja 28 '15  
Origin of the emery wheel. *Il Engineer* 119: 608-9 Je 18 '15

See also Grinding wheels

**Emissivity. See Radiation****Emmet, William Le Roy, 1859-**

Sketch. *por* Eng M 50:216-17 N '15

**Empire state gas & electric association**

New York state convention, Schenectady, May 6-8. *Elec W* 65:1267-9 My 15 '15

**Employees**

Advertising influence of employees. F. R. Slater. *Elec R & W Elec'n* 68:1147-8 Je 19 '15; Same. *Am Gas Light J* 103:149-50 S 6 '15; Abstract. *Elec Ry J* 45:1029 My 29 '15  
Best methods of dealing with men. H. E. Gamble. *Ry Age* (Mech ed) 89:61 F '15  
Business efficiency and the human element. M. Chapman. *Metal Work* 84:71-2 J1 16 '15  
Business relations of salesman and employer. F. Farrington. *Metal Work* 84:578-9 N 5 '15  
Can employer state his opinion of employee? E. J. Buckley. *Metal Work* 84:687 N 26 '15  
Card record of employees. C. E. Fairbanks. *Eng M* 48:573-5 Ja '15  
Card record of employees. S. G. Koon. *Eng M* 49:88-90 Ap '15  
Contractor's method for holding good men. M. C. Tuttle. *Eng N* 73:694-5 Ap 8 '15  
Examining the physique of Chicago elevated employees. H. E. Fisher. *Il Elec Ry J* 46:216-19 Ag 7 '15

How to keep men in your employ. W. A. Grieves. *Iron Tr R* 57:488-9+ S 9 '15  
How to keep your men healthy. S. C. Coey. *Iron Tr R* 56:389-80 F 13 '15  
Human element. J. Hartness. *Iron Age* 94:1297 D 8 '14; Same. *Metal Work* 82:780 D 11 '14; Same. *Am Gas Light J* 102:17-18 Ja 11 '15; Same. *Am Soc M E J* 37:2-3 Ja '15  
Human factor in production. A. A. Dowd. *Iron Tr R* 55:1186+ D 24 '14  
Human nature and successful shop management. R. T. Gebler. *Metal Work* 82:323-4 D 25 '14  
Making of men, motor cars and profits. O. J. Abell. *Il Iron Age* 95:33-41+ Ja 7 '15  
Periodic physical examination of employees. E. L. Flisk. *Am Ind* 15:21-3 F; 22-3 Je '15  
Physical control of employees. *Eng & Min J* 100:759 N 6 '15  
Physician in industry; how the science of preventive medicine is minimizing accidents. S. M. McCurdy. *Iron Age* 95:401 F 13 '15; Same. *Sci Am S* 79:265 Ap 24 '15  
Selling stock to employees. C. F. McElroy. *Inland Ptr* 56:182-4 N '15  
Three position plan of promotion. F. B. Gilbreth and L. M. Gilbreth. *Iron Age* 96:1057-9 N 4 '15  
Training and holding competent employees. F. Mappes. *Metal Work* 82:731-3 D 4 '14  
Where the money goes. R. O. Wye. *Elec R & W Elec'n* 65:1210-11 D 26 '14  
Word to managers about their men. W. Gould. *Elec W* 66:536-8 S 4 '15  
See also Apprentices; Employment systems; Foremen; Industrial betterment; Welfare work in industry  
**Employees, Government. See Government employees**  
**Employees, Training of**  
Improvement of distribution employees. C. E. Reinicker. *Il Am Gas Inst Pro* 9:pt 2, 1242-1302 '14; Same cond. *Am Gas Light J* 102: 33-9 Ja 18 '15; Discussion. *Am Gas Inst Pro* 9:pt 2, 1302-10 '14  
See also Apprentices; Corporation schools; Schools and shops, Cooperation of  
**Employers' associations**  
Commercial organizations in the United Kingdom with a description of British manufacturers' and employers' organizations. A. J. Wolfe. *U S Bur For & Dom Com* 102:41-53 '15  
Employers' organizations versus those of employees. H. Bryant. *Inland Ptr* 54:493-5 Ja '15  
**Employers' liability**  
Employees' injuries and what they cost. A. L. H. Street. *Iron Age* 95:481-2 F 25 '15  
See also Workmen's compensation  
**Employment agencies**  
See also Labor exchanges  
**Employment systems**  
Choosing and training the college engineer. *Iron Age* 95:1112-13 My 20 '15  
Cost of failures on your pay roll. E. St. E. Lewis. *Iron Tr R* 56:182 Ja 21 '15  
Employment bureau. H. G. Winsor. *Elec Ry J* 46:9-10 J1 3 '15  
Fundamentals involved in the help problem. C. F. Raymond. *Am Ind* 15:28-9 Ja '15  
Greater care in employing workmen will pay the contractor. H. D. Hammond. *Eng Rec* 71:501-2 Ap 17 '15  
Hiring and firing: the economic waste and how to avoid it. M. W. Alexander. *Am Ind* 16:17-22 Ag '15; Excerpt. *Ry R* 57:286-7 Ag 28 '15  
How do you select and promote your men. R. V. Wright. *Ry Age* 59:281-3 Ag 6 '15; Same. *Ry Age* (Mech ed) 89:387-9 Ag '15  
Human raw material and finished product. J. M. Mackay. *Metal Work* 83:183 Ja 29 '15  
Irregular employment; cost and causes. H. S. Dennison. *Am Soc M E J* 37:280-1 My '15  
Neglected principle of the safety first movement: proper selection of trainmen. C. J. Franklin. *Elec Ry J* 44:1244-6 D 5 '14  
Plan for improving the position of railway clerks. *Ry Age* 59:387 N 12 '15

**Employment systems—Continued**

Selecting the right occupation. Eng N 74:321-2 Ag 12 '15

Supervisor of personnel and his functions. E. M. Hopkins. Ind Eng 15:7-11 Ja '15; Summary. Iron Age 94:1371-2 D 10 '14

Waste in hiring and discharging employees. M. W. Alexander. Sci Am S 79:102-3 F 13 '15; Same cond. Am Gas Light J 103:43-4 J1 19 '15; Abstract. Iron Age 94:1032-3 O 29 '14; Abstract. Metal Work 82:609-10 N 6 '14; Abstract. Eng M 48:733-6 F '15

See also Employees

**Emporia, Kansas**

Municipal-utility problem at Emporia, Kan.; a central station leased to a progressive syndicate. Il Elec W 65:1106-7 My 1 '15

**Empress of Ireland (steamship)**

Salvage work on the Empress of Ireland. R. G. Skerrett. Il plan dig Int Marine Eng 20:60-2 F '15; Same cond. Sci Am 112:49 Ja 9 '15

**Emscher tanks**

Measuring the drainability of Emscher tank sludge. W. L. Stevenson. Il Eng & Contr 44:212 S 15 '15; Same. Munic J 39:427-8 S 16 '15; Same cond. Eng N 74:566 S 16 '15

Preliminary report on Emscher tanks and kindred sewage-clarification processes. K. Thumm and E. C. Reichle. Eng N 72:1306-8 D 31 '14

**Enamel and enameling**

Electrically heated enameling ovens. C. W. Bartlett. Il Gen Elec R 18:1130-5 D '15

6000-kw electric enameling load. Il plan Elec W 65:1702-3 Je 28 '15

Using electric ovens for enameling. Il Iron Tr R 57:215 J1 29 '15

Endosmosis. See Osmosis

**Endowments**

Awards for new truth. Sci Am 113:392 N 6 '15

Energy. See Force and energy; Free energy

Engine houses. See Roundhouses

**Engineering**

Application of engineering methods to the problems of the executive, director and trustee. H. Godfrey. Am Soc M E J 37:334-40 Je '15

Engineer a practical idealist. C. D. Marx. Eng Rec 72:378-80 S 25 '15

Human factors in engineering practice. J. Calder. Stevens Ind 82:193-206 J1 '15

Recent significant developments in science and engineering. Sibley J 29:109-14 Ja '15; Same. Sci Am S 79:83 F 6 '15

Relation of physical science to the development of engineering. R. C. Gibbs. Sibley J 29:129-32 Ja '15

Requisites for success in engineering. F. H. Fay. Boston Soc C E J 1:249-52 Ap '14

Review of the year 1914. Sci Am 112:6-7 Ja 2 '15

Roman technics and industry in early Germany. Sci Am S 79:130 F 27 '15

Year's review. Power 41:21-6 Ja 5 '15

See also Aeronautics; Aqueducts; Arches; Architecture; Blasting; Breakwaters; Bridges; Building; Building materials; Canals; Chemical engineering; Civil engineering; Curve plotting; Curves; Docks; Domestic engineering; Drainage; Dredging; Earthwork; Electric engineering; Embankments; Engineers; Engines; Foundations; Gas engineering; Grouting; Harbors; Haulage; Hydraulic engineering; Irrigation; Machinery; Marine engineering; Masonry; Mechanical drawing; Mechanical handling; Military engineering; Mining engineering; Municipal engineering; Railroad engineering; Railroads—Construction; Reclamation of land; Rivers; Roads; Sanitary engineering; Sea walls; Shop management; Shore protection; Standards; Engineering; Steam engines; Subways; Surveying; Tunnels and tunneling; Walls; Water supply engineering

**Accounting**

Cost accounting on construction work, with a description of the system used by the Abertaw construction company. L. H. Allen. Boston Soc C E J 1:133-77 Mr '14; Discussion. 1:455-79 O '14

Development of a unit cost system. N. Cunningham. Il Assn Eng Soc J 53:74-85 Ag '14; Same. Eng & Contr 42:374-6 O 21 '14; Discussion. Assn Eng Soc J 53:86-101, 165-70 Ag-S '14

**Estimates**

Erie canal enlargement greatly exceeds the estimated cost. Eng & Contr 43:139-40 F 17 '15

Estimating. C. R. Kreider. Elec R & W Elec'n 66:196-8 Ja 30 '15

Value of published costs. W. K. Palmer. Elec Ry J 45:345-6 My 1 '15

**Examinations**

California examination for construction engineer. Eng N 74:1031 D 2 '15

Engineers and civil-service examinations in Philadelphia and elsewhere. A. M. Swanson. Eng N 73:277-9 F 11 '15

Examinations for commissions, corps of engineers. Eng N 74:513-14 S 9 '15

**Study and teaching**

Methods of instruction in engineering extension; with discussion. K. G. Smith. W Soc E J 20:266-86 Mr '15

See also Engineering education

Tables, calculations, etc.

Computing area of segments of circles. H. N. Bradstreet. Eng N 73:692 Ap 8 '15

Computing offsets to circular curves. L. Pistner. Eng Rec 71:171, 307 F 6, Mr 6 '15

Reactions in a three-legged stiff frame with hinged column bases; with discussion. N. M. Stüneman. W Soc E J 19:881-920 N '14

To compute offsets to vertical curves. W. A. Cunningham. Eng Rec 71:244 F 20 '15

**Cuba**

American engineer in Cuba. F. E. Small. Power 41:83 Ja 19 '15

**Italy**

Italy and engineering. Sci Am S 80:11 J1 3 '15

**South America**

South America as a field for American engineers. B. Willis. Eng Rec 70:620 D 5 '14

**Turkey**

Engineering prospects in Turkey. Engineer 119:371-2, 395-6 Ap 16-23 '15

**United States**

American engineering in 1914. Engineer 119:123, 164-5, 174-5 F 5-19 '15

Engineering features of the Panama-Pacific International exposition. G. L. Bayley. Il Am Soc M E J 37:571-81, 696-8 O, D '15; Abstract. Eng N 74:845-6 O 28 '15; Discussion. Am Soc M E J 37:698-9 D '15

Engineering works of the West. Il Eng Rec 72:261-4 Ag 28 '15

Engineering, Chemical. See Chemical engineering

Engineering, Civil. See Civil engineering

Engineering, Electric. See Electric engineering

Engineering, Hydraulic. See Hydraulic engineering

Engineering, Marine. See Marine engineering

Engineering, Mining. See Mining engineering

Engineering, Municipal. See Municipal engineering

Engineering, Sanitary. See Sanitary engineering

Engineering, Steam. See Steam engineering

**Engineering buildings**

City of Jacksonville engineering building. W. P. Darwin. Il plans Eng N 72:1220 D 17 '14

**Engineering bureaus**

Iowa engineering society discuss the technical service bureau. Eng N 73:411 F 25 '15

Iowa engineers object to technical service bureau. Eng Rec 71:279 F 27 '15

Minnesota surveyors and engineers discuss bureau of engineering cooperation. Eng N 73:412 F 25 '15

**Engineering bureaus—Continued**

State competition with private engineers. Eng N 73:450 Mr 4 '15  
 State technical bureaus and the consulting engineer. Eng Rec 71:355 F 27 '15

**Engineering colleges**

Competition by professors in engineering schools. Eng N 73:276-7, 452-5, 646 F 11, Mr 4, Ap 1 '15

See also Throop college of technology

**Advertising**

One way to advertise an engineering school. Eng N 74:32-3 J1 1 '15

Engineering congress, International. See International engineering congress

**Engineering education**

American engineering education makes rapid advances. G. F. Swain. Eng Rec 72:387-9 S 25 '15

Automobile engineering curricula at the University of Michigan. W. T. Fishleigh. Horseless Age 35:111-14 Ja 20 '15

Broad survey of engineering education. Eng N 73:993-4 My 20 '15

Co-operative technical schools meet present needs. F. E. Ayer. Eng N 74:1059-61 D 2 '15  
 Course which gives broad training in business and economics. Eng Rec 72:323-4 S 11 '15

Education for professional success. S. H. Bunnell. Eng Rec 71:688-9 My 29 '15

Eminent members of profession discuss present standing of engineers. Eng Rec 71:361-4 Mr 20 '15

Engineering education, engineering success and leadership among men. Eng & Contr 43:350 Ap 21 '15

Illuminating engineering as a branch of technical instruction. C. E. Clewell. diagrs Illum Eng Soc 10:321-37; Discussion. 10:338-53 no 5 '15

New advanced course in electrical engineering at Columbia university. W. I. Slichter. J Gen Elec R 18:940-4 O '15

Relation of educational training to the practice of engineering. W. H. Burr. Eng Soc W Pa 31:56-73; Discussion. 31:73-113 F '15

Shop training that is worth while. R. E. Kennedy and J. H. Hogue. J Iron Tr R 57:617-23 S 30 '15; Same. Foundry 43:405-11 O '15

Should another course be added to the engineering schools' curriculum. R. C. Hardman. Eng N 74:563-4 S 16 '15

Suggestion for technical schools. H. R. Gilson. Mach 21:770-1 My '15

Training of the civil engineer. Eng Rec 70:655 D 19 '14

Washburn shops of the Worcester Polytechnic Institute. G. I. Alden. Am Soc M E J 37:391-4 J1 '15

What is the trouble with our engineering education? E. Orton, Jr. Eng N 74:823-3 O 28 '15

See also Engineering colleges; Industrial service movement; Railroad education; Technical education

**Engineering ethics**

Competition by professors in engineering schools. Eng N 73:276-7, 452-5 F 11, Mr 4 '15

Ethical advertising for engineers. W. O. Sell. Eng Rec 71:660 My 22 '15

See also Professional ethics

**Engineering foundation**

Board named to control Engineering foundation. Eng Rec 71:695-6 My 29 '15

Endowment fund established by the United engineering society. Eng N 73:293 Ja 14 '15

Engineering foundation. Am Soc M E J 37:111-x F '15

Engineering foundation. Power 41:179-80 F 2 '15

Engineering foundation established. Am Ind 15:42+ Mr '15

Engineering foundation established. Iron Age 95:289-90 F 4 '15

Engineering foundation; first regular meeting. Elec R & W Elec'n 66:1047 Je 5 '15

Engineering foundation started with \$200,000 gift. Eng Rec 71:153-4 Ja 30 '15

Foundation rests on broad ideas. Iron Tr R 56:289-90 F 4 '15

Gift of \$200,000 for the advancement of the profession of engineering. Eng N 73:226-8 F 4 '15

Inauguration of the engineering foundation. Elec V 65:310 Ja 30 '15

List of members of the Board. Am Inst Min E Bul 108:ixv D '15

Suggested activity for the engineering foundation. Power 41:339-40 Mr 9 '15

**Engineering laboratories**

Engineering experiment station of the University of Illinois. E. B. Paine. Am Inst E E Pro 34:2421-7 O '15

Laboratory control of water supplies. E. Bartow. J1 diagrs plan Am Water Works Assn J 1:720-6 D '14

Standard practice instructions for concrete testing laboratory. R. E. Goodwin. J1 Eng N 73:202-3 F 4 '15

See also Electric laboratories; Mining laboratories

**Engineering law**

Discussion of some legal principles of interest to engineers. W. L. Bowman. Eng & Contr 42:552-4 D 16 '14

See also Boilers—Laws; Building laws;

Electric engineering—Laws; Engineers—

Licenses; Heating—Laws; Plumbing laws;

Railroad law; Sewerage—Laws; Ventilation

—Laws; Waterworks—Laws

**Engineering libraries**

Growth of engineering libraries and need of indexes. Ry R 56:189-91 F 6 '15

Growth of engineering libraries and the need of indexes. H. W. Wilson. Ry R 56:430 Mr 27 '15

Indexing engineering literature. L. B. Krause. Ry R 56:356 Mr 13 '15

Reclamation service has unique library. Eng N 74:787 O 21 '15

Work of engineering libraries. Eng Rec 71:351 Mr 20 '15

Work of engineering libraries. K. C. Walker. Eng Rec 71:438 Ap 3 '15

**Engineering literature**

Early engineering handbooks. Mach 21:664 Ap '15

Indexing and filing technical literature. A. R. Kenner. Eng & Min J 99:851-6 My 15 '15

Proposed system of classifying and digesting the records of the society; with discussion. E. J. Prindle. Am Soc M E J 37:372-6 My '15

Suggested activity for the engineering foundation; indexing. Power 41:339-40 Mr 9 '15

See also Engineering libraries; Engineering periodicals

**Engineering materials**

See also Building materials; Concrete; Iron; Steel; Strength of materials; Testing

**Engineering offices**

Uptodate city-engineering office. Muscatine, Iowa; plan. Eng N 74:1040 N 26 '15

**Engineering periodicals**

Filing periodical literature. Ry R 57:657-8 N 20 '15

How can engineers best utilize the technical journals? J. W. Alvord. Eng & Contr 42:306-8 S 30 '14

Reading of a technical journal. H. S. Cooper. Elec Ry J 45:716-17 Ap 10 '15

**Engineering records**

Bridge cost record used by the Illinois highway commission. Eng & Contr 42:200-3 Ag 26 '14

City engineer's records in Frankfort, Ind. R. H. Boynton. Munic Eng 49:78-9 Ag '15; Same. Eng & Contr 44:165-6 S 1 '15

**Engineering reports**

How can annual reports of city engineering departments be improved? Eng Rec 71:254, 406-7 F 27, Mr 27 '15

More about annual and other reports. Eng Rec 71:512-13 Ap 24 '15

Regulations governing preparation of reports on water supply systems and extensions in Saskatchewan. Eng & Contr 42:131-2 Ag 5 '14

Scope of engineering reports and plans for sewerage and sewage disposal works in Saskatchewan. Eng & Contr 42:155-6 Ag 12 '14

**Engineering reports—Continued**

- Western society of engineers upholds status of engineering report. *Elec R & W Elec'n* 66:396 F 27 '15
- Engineering societies**
- Annual dues. *Elec W* 65:1227 My 15 '15
- Association of national engineering societies. *Eng N* 73:83 Ja 14 '15
- Contests in engineering society elections. *Eng N* 73:1319-20 D 31 '14
- Co-operation or amalgamation of local engineering societies. *Eng N* 74:1042-3 N 25 '15
- Directory of electrical associations. *Elec W* 66:1063 N 6 '15
- Duties and sphere of action of a local engineering society with special reference to the Boston society of civil engineers. H. P. Eddy. *Boston Soc C E J* 2:149-63 Ap '15
- Engineer awakes; abstracts. F. H. Newell. *Eng & Contr* 44:221-3 S 23 '15; *Eng N* 74:568-70 S 16 '15; *Power* 42:459-60 S 23 '15; *Eng Rec* 72:420-1 O 2 '15
- Financing engineering societies. *Elec R & W Elec'n* 66:799 My 1 '15
- Future of the engineering profession. A. J. Himes. *Eng Rec* 72:663 N 27 '15
- How one engineering society secured publicity. C. E. Drayer. *Eng Rec* 70:645-6 D 12 '14
- Ideal engineering society. P. M. Lincoln. *Am Inst E E Pro* 34:623-4 Ap '15
- Illuminating engineering society. C. H. Sharp; W. D. Weaver. *Elec R & W Elec'n* 66:918-20 My 15 '15
- Importance of the local engineering society. *Eng N* 72:1320-1 D 31 '14
- List of engineering societies of the United States and Canada. *Eng N* 73:1099-1104 Je 8 '15
- Local engineering society; discussion. J. F. Drugar. *Assn Eng Soc J* 53:301-4 D '14
- Rules for society programs. *Eng Rec* 72:536 O 30 '15
- Time at hand when the engineering society should awake to its deficiencies; abstracts. E. McCullough. *Eng Rec* 72:421-2 O 2 '15; *Power* 42:530-1 O 12 '15
- What the Southwestern electrical and gas association can do for me. A. V. Wainwright. *Am Gas Light J* 103:172-3 S 13 '15
- See also names of societies, e. g. Associated engineering societies of St. Louis
- Engineering standards.** See Standards, Engineering
- Engineers**
- Commission plan for control of public works. *Eng N* 73:1186-8 Je 17 '15
- Constitution and list of members of the American water works association. *Am Water Works Assn J Sup* 1:1-94 D '14
- Cooperation proposed between engineers and the Chicago association of commerce. *Ry R* 58:442 Mr 27 '15
- Deficiency in personality responsible for engineer's failure to receive recognition. G. F. Swain. *Eng Rec* 71:261-2 F 27 '15
- Effect of architects' license laws upon engineers. *Eng N* 73:382-3 F 25 '15
- Eminent members of profession discuss present standing of engineers. *Eng Rec* 71:361-4, 390-2 Mr 20-27 '15
- Engineer a practical idealist. C. D. Marx. *Eng Rec* 72:378-80 S 25 '15
- Engineer and publicity, with special reference to the publicity work of the Cleveland engineering society; abstract. C. E. Drayer. *Eng & Contr* 42:574-5 D 23 '14; Abstract, with discussion. *Am Soc M E J* 37:88-92 F '15
- Engineer awakes; abstracts. F. H. Newell. *Eng & Contr* 44:221-3 S 23 '15; *Eng N* 74:568-70 S 16 '15; *Power* 42:459-60 S 23 '15; *Eng Rec* 72:420-1 O 2 '15
- Engineering contractor. H. P. Gillette. *Eng & Contr* 44:315-17 O 20 '15
- Engineering positions in Illinois with state highway commission and with state utilities commission. *Eng & Contr* 43:421 My 12 '15
- Engineers and public service. M. E. Cooley. *Elec Ry J* 45:1153-5 Ja 19 '15
- Engineers and public-service commissions. *Eng N* 74:247-8 Ag 5 '15
- Engineers as arbiters of public equity and justice. W. M. Daniels. *Eng Rec* 70:622-4 D 5 '14
- Engineers as members of public service commissions. C. H. Ledlie. *Eng N* 73:547-8 Mr 18 '15
- Engineers from the contractor's viewpoint. R. W. Sherman. *Eng N* 72:1138 D 3 '14
- Engineer's idea of values is usually confused; Prof. John R. Commons's views. *Eng & Contr* 43:284 Mr 31 '15
- Engineers present open letter to chairman of New York constitutional convention. *Elec R & W Elec'n* 67:484 S 11 '15
- Engineers' salesmanship. A. H. Pohlman. *Power* 41:723-4 My 25 '15
- Engineers will discuss plans for nation-wide cooperative movement. *Eng Rec* 71:766-7 Je 19 '15
- Experience of an engineer in public office. M. L. Cooke. *Am Soc M E J* 37:708-9 D '15
- Factors in municipal engineering; abstracts. M. L. Cooke. *Am Soc M E J* 37:81-7 F '15; *Eng Rec* 70:644-5 D 12 '14; Discussion. *Am Soc M E J* 37:85-7 F '15
- Herbert Spencer, engineer. E. E. Thum. *Eng N* 73:802-4 Ap 29 '15
- How engineers earn fees. W. L. Benham. *Eng N* 74:372 Ag 19 '15
- Insurance as an aid to engineers. N. H. Daniels. *Boston Soc C E J* 2:91-108 Mr '15
- Investment banker and the engineer. C. A. Hobein. *Assn Eng Soc J* 54:237-57 Je '15
- Knowledge of affairs needed by engineers. I. O. Baker. *Eng Rec* 71:722 Je 5 '15
- Place of the engineer in modern society. C. A. Adams. *Sibley J* 29:211-19 Ap '15
- Plain truth about leadership. *Eng Rec* 71:255 F 27 '15
- Political economy and the engineer. G. L. Hoxie. *Elec W* 65:1549-51 Je 12 '15
- Position of the engineer; abstracts. I. O. Baker. *Eng N* 73:1013 My 27 '15; *Concrete Cem* 7:184 N '15
- Practicing engineers and industrial education. F. G. Bonser. *Eng N* 72:1133-4 D 3 '14
- Publicity for the engineer and its importance; abstracts. C. E. Drayer. *Eng N* 73:1018-19 My 27 '15; *Eng Rec* 71:718-19 Je 5 '15
- Relation of the architect and the engineer. D. D. Kimball. *Heat & Ven* 12:13-18 Mr; 26-30 Ap '15
- Relations of accountants and engineers in special investigations of various kinds of plants. H. C. Hopson. *J Account* 20:397-9 N '15
- Requisites for success in engineering. F. H. Fay. *Boston Soc C E J* 1:249-62 Ap '14
- Specialized experience of engineers and contractors vital to country's defense. G. Perrine. *Il Eng Rec* 72:594-6 N 13 '15
- Status of the engineer. E. W. Rice, jr. *Gen Elec R* 18:234-7 Ap '15; Same. *Am Inst E E Pro* 34:643-50 Ap '15
- Status of the engineer; symposium. *Am Inst E E Pro* 34:635-74 Ap '15; Abstracts. *Elec R & W Elec'n* 66:391-2 F 27 '15; *Elec W* 65:494-5 F 20 '15; *Eng N* 73:409-10, 742 F 26, Ap 15 '15
- Taking inventory. *Eng & Contr* 43:437-8 My 19 '15
- Time at hand when the engineering society should awake to its deficiencies; abstracts. E. McCullough. *Eng Rec* 72:421-2 O 2 '15; *Power* 42:530-1 O 12 '15
- University of Wisconsin promotes engineering work without displacing consulting engineer. G. R. Bascom. *Eng Rec* 72:47-8 J 10 '15
- Value of sales experience to the engineer. W. T. Price. *Sibley J* 30:11-13 O '15
- Volunteer engineer officers. *Eng & Min J* 100:796-7 N 18 '15
- See also Civil engineers; Electric engineers; Heating engineers; Locomotive engineers; Mining engineers; Technical writing
- Licenses**
- Architects versus engineers; Illinois engineers win fight for legal recognition. *Assn Eng Soc J* 54:277-99 Je '15
- Hearing on Massachusetts licensing bill. *Power* 41:418-19 Mr 23 '15

**Engineers—Licenses—Continued**

- History of the bill for a structural engineer's license law. A. Allen. W Soc E J 20:390-2 Ap '15
- Illinois law requires licenses for engineers. Eng Rec 72:71-2 JI 17 '15
- License legislation in the United States. A. A. Potter. Power 41:792-3 Je 8 '15
- Licensing structural engineers in Illinois. Eng N 74:823 Ag 12 '15
- Model boiler and engineers' license law—references. Power 42:166-8 Ag 3 '15
- Model boiler-inspection and engineers' license law. Power 42:82-3 JI 20 '15
- Pennsylvania license law declared unconstitutional. Power 42:202 Ag 10 '15
- Proposed act to provide for the licensing of structural engineers, and to regulate the practice of structural engineering in Illinois. Eng & Contr 43:243-4 Mr 17 '15
- Provisions of the Illinois license law for structural engineers. Eng & Contr 44:65-6 JI 28 '15
- Qualifications of Montana hoisting engineers. A. L. Street. Power 42:213 Ag 10 '15
- Resolution of board of direction of Western society of engineers pertaining to proposed license law for structural engineers. Eng & Contr 43:299-300 Mr 31 '15
- Structural engineers' license law in Illinois. Eng N 74:139-40 JI 15 '15
- Structural engineers' license law of the state of Illinois. W Soc E J 20:530-40 Je '15

**Salaries**

- Earnings of graduate and nongraduate engineers. Eng N 74:325, 613 Ag 12, S 23 '15
- Grades and compensation for engineers in the employ of the city of New York. Eng Rec 71:804 Je 26 '15
- One way to advertise an engineering school. Eng N 74:32-3 JI 1 '15
- Sliding salary scale for city engineers. Eng & Contr 44:117-18 Ag 18 '15
- Standardizing engineering positions and salaries in New York city. Eng N 73:54-5 Ja 14 '15
- Statistics of the earnings of graduate engineers. Eng N 74:505 S 9 '15
- Wages of engineers. E. Pagett. Power 41:18 Ja 5 '15

See also Civil engineers

**Societies**

See Engineering societies

- Engineers, American association of. See American association of engineers
- Engineers, National association of stationary. See National association of stationary engineers

Engineers, State. See State engineers

**Engineers' clubs**

- Ingredients of an engineers' club. A. P. Greensfelder. Assn Eng Soc J 54:1-5 Ja '15

**Engines**

- Census of primary power equipment. diag Elec W 65:215-16 Ja 23 '15
- Economic selection of prime movers. R. Traut-schold. Power 42:511-13 O 12 '15
- Gas and steam engines and the turbine. J. E. Johnson, Jr. Iron Age 95:626-9 Mr 18 '15
- Same. Sci Am S 79:294-5 My 8 '15
- N. E. L. A. committee report on prime movers. Elec W 65:1512-13 Je 12 '15; Elec R & W Elec N 66:1111 Je 12 '15
- Present status of prime movers. H. G. Stott, R. J. S. Pigott and W. S. Gorsuch. Am Inst E E Pro 33:953-86 Je '14; Abstract. Elec R & W Elec N 65:81-2 JI 4 '14; Abstract. Elec Ry J 44:72-4 JI 11 '14; Discussion. Am Inst E E Pro 34:35-102 Ja '15
- Prime movers in American plants. A. A. Potter and W. A. Buck. Elec W 65:668-9 Mr 13 '15
- Recent developments in prime movers. W. F. Durand. Elec W 65:19-21 Ja 2 '15
- Uniformity of running of prime movers and its experimental determination: abstract. Bonin. Am Soc M E J 87:43 Ja '15
- See also Aeroplane engines; Air engines; Automobile engines; Blowers; Crankpins; Crankshafts; Fire engines; Fuel; Gas and

oil engines; Gas turbines; Governors (machinery); Heat engines; Locomotives; Marine engines; Pistons; Pumping engines; Pumps; Steam engines; Steam turbines; Tractors; Turbines

**England****Coast raids**

- Engineers and the Hartlepool raid. Engineer 113:610 D 25 '14

**English language**

- Bettering the use of English. S. C. Earle. Elec Ry J 45:94 Ja 9 '15
- How we got our alphabet. W. Rice. Inland Ptr 55:234-5 My '15
- Possessive case. Inland Ptr 54:645-6 F '15
- See also Compound words; Proofreading; Punctuation

**English language (for foreigners)**

- Teaching English to foreigners in industry. P. Roberts. Am Ind 16:24-6 O '15

**Engraving**

- Process engraving. S. H. Horgan. See monthly numbers of the Inland printer
- See also Engraving machines; Etching; Lithography; Photoengraving
- Engraving and printing, Bureau of. See United States—Engraving and printing, Bureau of
- Engraving machines
- Gorton universal engraving machine. II diag Mach 21:585-7 Mr '15

**Ensilage**

- Chemical changes during silage formation. R. E. Neidig. Am Chem Soc J 36:2401-13 N '14
- Occurrence of methyl alcohol in corn silage. E. B. Hart and A. R. Lamb. Am Chem Soc J 36:2114-18 O '14

**Envelop sealer**

- Envelop sealer of the pension office. II Sci Am 112:162 F 13 '15

**Envelopes**

- Window envelopes. Illum Eng Soc 10:394-6 no 5 '15

**Enzymes**

- Behavior of enzymes at low temperatures. J. S. Hepburn. J Fr Inst 179:581-5 My '15
- Enzymes of the central nervous system. H. M. English and C. G. MacArthur. Am Chem Soc J 37:653-64 Mr '15
- Enzymes present in alfalfa; alfalfa investigation. C. A. Jacobson and A. Holmes. Am Chem Soc J 36:2170-82 O '14
- Enzymes: the synthetic and hydrolytic oxyn-trilase. V. K. Kriebel. Am Chem Soc J 37:2205-13 S '15
- Function of enzymes. S. C. Prescott. Sci Am S 79:67 Ja 30 '15
- Retention of activity by urease and by oxidase after exposure to the temperature of liquid air. J. S. Hepburn and C. B. Bazzoni. bibliog J Fr Inst 180:803-5 N '15
- Starch-forming enzyme from malt: its action on the hemicelluloses and its commercial application to brewing. C. B. Davis. II J Ind & Eng Chem 7:115-18 F '15
- Studies on enzyme action; some experiments with castor bean urease. K. G. Falk and K. Sugura. Am Chem Soc J 36:2166-70 O '14
- Studies on enzyme action: the esterase and lipase of castor beans. K. G. Falk and K. Sugura. Am Chem Soc J 37:217-30 Ja '15
- Studies on enzyme action: the lipase of soy beans. K. G. Falk. Am Chem Soc J 37:649-53 Mr '15
- See also Digestive ferments

**Eoliths**

- Were the eoliths made by man? II Sci Am 112:366 Ap 17 '15

**Epicassit**

- New method of tin lining or coating. Eng & Contr 42:468-9 N 11 '14

**Equitable building, New York city**

- Description of Equitable building. II plans Arch & Bldg 47:165-78 My '15
- Fire prevention measures in the Equitable building. E. R. Hardy. II Arch & Bldg 47:179-83 My '15
- Lighting the Equitable building. F. L. Godinez. Arch & Bldg 47:188-90 My '15



- Equitable building New York city—Continued**  
 Mechanical plant of the Equitable building. II  
 plan Arch & Bldg 47:191-5 My '15  
 Power plant of the new Equitable building. II  
 Elec W 66:81-5 J1 10 '15  
 Rooms of the Bankers' club of America. II  
 Arch & Bldg 47:184-7 My '15
- Erection of bridges. See Bridges—Erection**
- Erepsin**  
 Studies on the action of erepsin. F. E. Rice.  
 Am Chem Soc J 37:1819-33 My '15
- Erie, Pennsylvania**
- Floods**  
 Concrete work withstands severe tests in the  
 Erie flood. L. R. Ferguson. II Concrete Cem  
 7:148-50 O '15  
 Destruction wrought by Erie flood. II Elec W  
 66:489-92 Ag 28 '15  
 Erie can remove flood menace by spending  
 \$798,000 on Mill creek improvement. F. Gan-  
 nett. II diag map Eng Rec 72:440-2 O 9 '15  
 Erie flood-protection report. diag Eng N 74:  
 937 N 11 '15  
 Erie rainstorm and flood. II map Eng N 74:  
 326-9 Ag 12 '15  
 Restricted stream channel responsible for Erie  
 flood damage. T. E. Seelye. II Eng Rec 72:  
 186-9 Ag 14 '15
- Water supply**  
 Erie waterworks improvements. II Munic J  
 89:358-9 S 2 '15
- Erie barge canal. See New York state barge canal**
- Erosion**  
 Cause and prevention of storm erosion on Gulf  
 coast. G. O. Case. II Eng N 74:1072-5 D 2 '15  
 Coast erosion and protection on Long Island  
 and New Jersey. G. O. Case. map Eng N 74:  
 848-51, 388-91, 438-42 Ag 19-S 2 '15  
*See also Valleys*
- Esakmos**  
 Aglait illunainortut Okioq, Labradorerne. A. W.  
 Birdsall. II inland Ptr 54:679-80 F '15
- Essential oils**  
 Blue hydrocarbon occurring in some essential  
 oils. A. E. Sherndal. Am Chem Soc J 37:167-  
 71 Ja '15  
 Contributions of the chemist to the per-  
 fumery and essential oil industry. E. T. Bel-  
 ser. J Ind & Eng Chem 7:836-7 N '15  
 Hydrogen number of some essential oils and  
 essential oil products; oils of sassafras,  
 anise, fennel, clove and pimenta. A. R. Al-  
 bright. II diag Am Chem Soc J 36:2188-202  
 O '14  
 Oil of ocyum pilosum Roxb. K. Bhaduri. Am  
 Chem Soc J 36:1772-3 Ag '14  
 Volatile oil of calycanthus floridus. E. R.  
 Miller, G. W. Taylor, and M. H. Eskew. Am  
 Chem Soc J 36:2182-7 O '14  
 Volatile oils of the genus solidago. E. R.  
 Miller and J. M. Moseley. Am Chem Soc J  
 37:1288-94 My '15  
 Volatile oils of the genus solidago. E. R. Mil-  
 ler and M. H. Eskew. Am Chem Soc J 36:  
 2538-41 D '14  
*See also Citrus oils; Perfumery*
- Esterification**  
 Esterification of benzoic acid by mercaptans.  
 L. S. Pratt and E. E. Reid. diag Am Chem  
 Soc J 37:1934-48 Ag '15
- Esters**  
 Determination of volatile esters in citrus oils  
 and extracts. A. R. Albright and C. O.  
 Young. Am Chem Soc J 37:2382-7 O '15  
 Esters, as well as the monomolecular  $\beta$ - and  
 $\gamma$ -lactones, of d-mannonic and d-gluconic  
 acids; on ortho-bis-d-galactonic acid, d-gal-  
 actonic  $\gamma$ -lactone and its mono-hydrate.  
 O. F. Hedenburg. Am Chem Soc J 37:345-72  
 F '15  
 New hydroxyurethanes and chromoisomeric  
 silver salts of their acyl derivatives. L. W.  
 Jones and R. Oesper. Am Chem Soc J 36:  
 2208-23 O '14  
*See also Chlorobenzoylacetic esters*
- Ethetics**  
*See also Art*
- Estimates**  
 Contractors' office forms and systems. M. J.  
 Lavalie. Elec R & W Elec'n 67:52-3 J1 10 '15  
 Do you estimate or guess in bidding? S. Stern.  
 Metal Work 83:44-5 Ja 1 '15  
 How quantity competition can be eliminated.  
 H. M. Saumenig. Eng Rec 72:566 N 6 '15  
 Modern estimating methods. A. A. Dowd. II  
 diag Mach 21:468-9 F '15  
 Selling price of castings. A. O. Backert. Iron  
 Tr R 56:228-30+ Ja 28 '15  
*See also Engineering—Estimates; Quantity  
 surveying*
- Etching**  
 Etching by the transfer process. II Metal Ind  
 n s 18:6-8 Ja '15  
 Etching reagents suitable for particular  
 metals and alloys. O. F. Hudson. Eng &  
 Min J 99:1120 Je 26 '15  
 How to detect phosphorus in steel. W. T.  
 Stead. II Iron Tr R 57:989-90 N 15 '15  
 How to select etching reagents. O. F. Hudson.  
 II Iron Tr R 57:216-20 J1 29 '15  
*See also Engraving*
- Etchings**  
 Portfolio of etchings. R. F. Seymour. Arch  
 Rec 38:489-98 O '15  
 Six etchings of Brooklyn bridge, by H. De  
 Ville; text by M. Stapley. Arch Rec 38:583-  
 91 N '15  
 Six etchings of European iron and steel works.  
 J. Pennell. Iron Tr R 56:57-64 Ja 7 '15
- Ethane**  
 Separation of ethane and ethylene by frac-  
 tional distillation in a vacuum at low tem-  
 peratures. G. A. Burrell and I. W. Robert-  
 son. Am Chem Soc J 37:896-902 Ap '15  
 Vapor pressure of ethane and ethylene at  
 temperatures below their normal boiling  
 points. G. A. Burrell and I. W. Robertson.  
 diag Am Chem Soc J 37:1893-1902 Ag '15
- Etherometer**  
 Apparatus for mechanical administration of  
 anaesthetics. II Sci Am 113:371+ N 27 '15
- Ethers**  
 Action of aluminium chloride on the aliphatic  
 ethers. G. B. Frankforter and E. A. Daniels.  
 Am Chem Soc J 37:2560-7 N '15  
 Derivatives of phenyl ether. A. N. Cook and  
 F. F. Sherwood. Am Chem Soc J 37:1835-9  
 Ag '15  
 On the oxidation of ether. R. M. Isham and  
 C. E. Vall. Am Chem Soc J 37:902-6 Ap '15  
 Rate of evaporation of ether from oils and its  
 application in oil-ether colonic anesthesia.  
 C. Baskerville. J Ind & Eng Chem 7:868-70  
 O '15
- Ethiopia**
- Antiquities**  
 Meroë the royal city of Ethiopia. Sci Am S  
 79:98 F 13 '15
- Ethylene**  
 Separation of ethane and ethylene by frac-  
 tional distillation in a vacuum at low tem-  
 peratures. G. A. Burrell and I. W. Robert-  
 son. Am Chem Soc J 37:896-902 Ap '15  
 Studies in catalytic hydrogenation; a new  
 method of hydrogenation of volatile sub-  
 stances and the rate of hydrogenation of  
 ethylene. J. B. Rafter and E. E. Reid. Am  
 Chem Soc J 37:2115-18 S '15  
 Vapor pressure of ethane and ethylene at  
 temperatures below their normal boiling  
 points. G. A. Burrell and I. W. Robertson.  
 diag Am Chem Soc J 37:1893-1902 Ag '15
- Etiquet**  
*See also Courtesy*
- Eucalyptus globulus**  
 Eucalyptus oil industry of California. P. W.  
 Tompkins. J Ind & Eng Chem 7:995-7 N '15  
 Investigations on the oil of eucalyptus globu-  
 lus of California. C. E. Burke and C. C.  
 Scallone. II J Ind & Eng Chem 7:206-9 Mr  
 '15
- Eugenics**  
 Eugenics and war. Sci Am S 79:230 Ap 10 '15  
 Protection of the strong; working of German  
 insurance laws for the protection of the  
 poor. Sci Am S 79:343 My 29 '15

**Euler formula**

Curves for strength and deflection of very long columns. E. L. Robinson. Eng N 73:1108-9 Je 10 '15

**Euphrates river**

Hindia dam on Euphrates river. II diagrs plan map Eng Rec 71:24-5 Ja 2 '15

**European war, 1914-**

Achilles' heel of Germany. Sci Am 113:154 Ag 21 '15

Art of deception in war. II Sci Am 112:124+ F 6 '15

Atrocities in the scholars' war. Sci Am 113:38 Jl 10 '15

Defense of Belgium by inundation. P. Sallior. II map Sci Am S 79:166 Mr 13 '15

Foresters in the great war. S: T. Dana. II Am For 20:858-67 D '14

Germany's grip on French steel works. E. Schröder. Eng M 49:733-4 Ag '15

Glasgow railway men as soldiers. II Elec Ry J 45:47-9 Ja 2 '15

Great achievements of German state railroad lines. F: W. Wile. Ry Age 59:428-30 S 3 '15

Same. Sci Am S 80:318-19 O 2 '15

Lessons of the present war from a technical point of view. H. Maxim. Sci Am 112:453 My 15 '15

Railroad soldier at the front. W. S. Hlatt. Ry Age 59:811-12 O 29 '15

Review of the year 1914: army and navy. Sci Am 112:6 Ja 2 '15

Ups and downs of war. Sci Am 111:502 D 19 '14

See also Lusitania (steamship)

**Aerial operations**

Aeronautic lessons of the European war. C. Dienstbach. II Sci Am 112:637+ Je 26 '15

Aeronautics in 1914. Engineer 119:7-8 Ja 1 '15

Excerpt. Sci Am S 79:114 F 20 '15

Captive balloons on the French front. N. Truslow. Sci Am 113:181 Ag 28 '15

Cost of the war in airships; summary of the airship losses of the central empires. L. d'Orcy. II map Sci Am 113:294+ O 2 '15

European war from an engineer's standpoint. J: B. C. Kershaw. II diagrs Eng M 48:498-507 Ja '15

Loss of Zeppelins. Sci Am 113:95 Jl 31 '15

Progress in aeronautics; a review of recent air-raids and what they have accomplished. H. Bannerman-Phillips. Sci Am S 79:250-1 Ap 17 '15

War experiences of an air scout. F: C. Hild. II Sci Am 111:520+; 112:50+; 51+ D 26 '14-Ja 9 '15

Zeppelin and aeroplane raids. Engineer 120:265-6 S 17 '15

Zeppelin question; facts and figures indicating the number and capacity of the air fleet. G. Prade. Sci Am S 79:214-15 Ap 3 '15

Zeppelin raid on Paris. C. Dienstbach. Sci Am 112:332 Ap 3 '15

Zeppelins. Engineer 120:227-8 S 3 '15

**Campaigns and battles**

Battle of the Marne. W. N. Hlatt. Ry Age 59:26-8 Jl 2 '15; Abstract. Eng M 50:108-9 O '15

Campaigning in winter. Sci Am 111:461 D 5 '14

First year of the great war; a review of the operations in all theaters of war. M: E. Hanna. II Sci Am 113:110-11+ Ag 7 '15

Geographic aspects of the war. D. W. Johnson. II diag Sci Am S 80:194-5, 222-4 S 25-O 2 '15

Strategic moves of the war. Sci Am 111:265, 306, 322+, 338+, 350, 378, 410, 422, 438-9, 454, 490, 506, 522+; 112:590-1, 600, 628; 113:28, 42, 62, 78, 94, 140-1, 158-9, 180, 198+, 224, 248, 270, 290, 320+ 338, 358, 378, 396+, 426, 466+, 486+, O 3-D 26 '14; Je 12-Jl 31, Ag 14-N 13, 27-D 4 '15

Strategic positions of the contending armies. Sci Am 112:428 My 8 '15

**Causes**

Economic causes of the war traced to mushroom growth of German industries. H. Hauser. Automobile 33:382-5 Ag 26 '15

**Commercial and financial aspects**

America and Brazil in the war crisis. M. Summers. Metal Work 82:762 D 11 '14

British engineering firms after the war. Engineer 120:392-3 O 22 '15

British India. U S Sp Cons Rep 72:490-503 '15

Chemical trade and the war. Engineer 120:379 O 22 '15

Doing without Europe. Sci Am 112:128, 157+, 176, 196 F 6-27 '15

Effect of the war on American industries. E: E. Pratt. Sci Am 113:203, 230-1 S 4-11 '15

Effect of the war on regulation of public utilities. N. T. Guernsey. Elec W 65:12-14 Ja 2 '15

Effect of the war upon the American chemical industries. J. H. James. Eng Soc W Pa 31:381-400; Discussion. 31:400-16 Je '15

Electrical industry in England. H. Harrison. Elec W 65:974 Ap 17 '15

England's colonies and the war. Am Ind 15:40 Ap '15

European war and the lumber trade. R. C. Bryant. Am For 20:881-6 D '14

Financial developments in South American countries. W: H. Lough. U S Bur For & Dom Com 103:1-42 '15

Foreign competition after the war. Engineer 119:567-8 Je 4 '15

Future prospects of the electrical export business. M. A. Oudin. Elec W 65:14-15 Ja 2 '15

Germany's preparations for the industrial struggle after the war. Engineer 120:368-9 O 15 '15

How American industry may be hampered through a depleted money market and an embarrassment of credits. Am Ind 15:17 Ap '15

Industrial energy as a military weapon. J. R. Finlay. Met & Chem Eng 13:547-50 S 1 '15

Influence of the European war on the mining industry of Dutch Guiana. F. B. Percival. Eng & Min J 99:445 Mr 6 '15

Influence of the war on the automobile industry. H. W. Perry. II Sci Am 113:206-8 S 4 '15

Interest rates on public utility bonds. H. S. Welsh. Elec Ry J 45:137-8 Ja 16 '15

Italian cotton industry since the European war. R. Sansone. Textile World 49:501-3 Ag '15

Lessons of the war; after-the-war policy. Engineer 120:414-15 O 29 '15

Nickel, copper and mercury as affected by the war. J Ind & Eng Chem 7:71-2 Ja '15

Non-ferrous metals and the war. W. R. Ingalls. Iron Age 96:420-1 Ag 19 '15

Results of the war for public service commissions to consider. H: Floy. Elec W 65:15-16 Ja 2 '15

Seed supply and the war. G. E. Mitchell. II Sci Am 111:488 D 12 '14

Solving some war order problems. E. C. Kreutzberg. II Iron Tr R 57:433-6+ S 2 '15

Tasks of German inventors in wartime. Sci Am 113:214+ S 4 '15

War and its bearing upon contracts and trade. A. Del Mar. Eng M 50:18-27 O '15

War and lumber. Sci Am 113:194 S 4 '15

War and our chemical industries; symposium; with discussion. J Ind & Eng Chem 7:59-64 Ja '15

War and our metals. L. O. Kellogg. Eng M 49:18-27 Ap '15

War and the British engineer. Engineer 118:203-4, 226-7, 249, 282-3, 304-5, 372-3, 512-13; 119:114-15 Ag 28-S 25, O 16-N 27 '14, Ja 29 '15

War and the chemical industry. W: H. Nichols. J Ind & Eng Chem 7:131-6 F '15

War and trade losses of overseas countries. Am Ind 16:45 O '15

War orders and American industry. Eng M 49:481-8 Jl '15

Zinc corporation and the war. Eng & Min J 100:95-7 Jl 17 '15

**Cost**

Economics of the war. Eng & Min J 99:398 F 27 '15

**Destruction of property**

Architect's impressions in Belgium. E. T. Richmond. II Am Inst Arch J 8:153-8 Ap '15

Destruction of architectural monuments in Belgium. R. A. Cram. An Inst Arch J 3:185-6 Ap '15

Great war's destruction of French forests. J. P. Alaux. II Am For 21:155-68 Mr '15

**European war—Destruction of property—Cont.**

Report of a German commission upon the destruction of architectural monuments in Belgium. R. D. Kohn. *Am Inst Arch J* 3: 130-2 Mr '15  
Without knowing why. *Am Inst Arch J* 3: 198-200 My '15

**Maritime law**

Blockade by submarine. *Sci Am* 112:376 Ap 24 '15

**Medical and sanitary affairs**

Bath trains of the Russian army. *Il Sci Am* 113:13 JI 3 '15; Same. *Metal Work* 84:363-4 S 17 '15  
Deaf-mutism produced by shock. *Sci Am* S 80: 386 N 20 '15  
Educating invalid soldiers. A. Gradenwitz. *Il Sci Am* 113:239 S 11 '15  
Exposition of military sanitation; showing how the sick and wounded are cared for. A. Gradenwitz. *Il Sci Am* S 79:316-17 My 15 '15  
Letters from the firing line: the care of the wounded. X. Sager. *Il Sci Am* 111:510+ D 19 '14  
Roentgenology in war. *Il Sci Am* S 79:68 Ja 30 '15

See also European war—Relief work; Hospital cars; Hospital trains

**Military equipment**

Ammunition and finance in the present war. *Sci Am* 112:604 Je 19 '15  
Austria's famous Skoda mortars. *Il Sci Am* 113:12 JI 3 '15  
Blowing up barbed wire entanglements: the poles bearing explosives used by the French, Russian and English armies. *Il Sci Am* 111: 463-9 D 5 '14  
Electricity in the war. *Il Elec R & W Elec'n* 67:76-8 JI 10 '15  
European infantryman's rifle. E. S. Crossman. *Il Sci Am* 112:398-9 My 1 '15  
European war from an engineer's standpoint. J. B. C. Kershaw. *Il Eng M* 49:43-50 Ap '15  
Flying machines of the warring powers. J. J. Ide. *diags Sci Am* 112:226-7+ Mr 6 '15  
French mount 75mm. gun on 30 h.p. chassis. W. F. Bradley. *Il Automobile* 33:305-9 F 13 '15  
Military tactics and the motor. *Il Sci Am* 112:8-9+ Ja 2 '15  
Motor trucks and modern warfare. J. Brinker. *Il Sci Am* 113:398-9+ N 6 '15  
Munition metals. H. C. H. Carpenter. *Sci Am* S 80:262-3 O 23 '15; Abstract. *Eng M* 50:112-13 O '15  
Russian bath trains. *Ry Age* 58:378-9 F 26 '15  
War uses of the motorcycle: cycle ambulance and motor machine gun. *Il Sci Am* 112:138+ F 6 '15

See also Automobiles in war

**Naval operations**

Action in which the Carmania sank the Cap Trafalgar. *Il Sci Am* 111:449 D 5 '14  
Battle of the North sea. *Il Sci Am* 112:136-7 F 6 '15  
Forcing the Dardanelles. *Il map Sci Am* 112: 244, 264-5, 316-17 Mr 13-20, Ap 3 '15  
Hitting an invisible ship at a ten-mile range. *Il Sci Am* 112:218-19 Mr 6 '15  
Loss of the pre-dreadnought Bulwark. *Il Sci Am* 111:489 D 13 '14  
Naval lessons of the war. H. M. Kennard. *Sci Am* 112:473 My 23 '15  
Russian naval victory in the Baltic. *Il Sci Am* 113:209 S 4 '15  
Sinking of the German Pacific squadron. *Il Sci Am* 112:25 Ja 2 '15  
Some recent naval operations. *Sci Am* 111:518 D 26 '14  
Twelve months of the great naval war; how the British fleet has justified its existence. J. B. Walker. *Il Sci Am* 113:108-9+ Ag 7 '15  
War of attrition. *Sci Am* 112:376 Ap 24 '15  
When the German fleet comes out. *Sci Am* 112:586 Je 12 '15  
Wrecking of the cruiser Emden by shell fire. *Il Sci Am* 113:376 O 30 '15  
See also European war—Submarine operations; Lusitania

**Neutral powers**

Shall there be a neutral coalition? *Sci Am* 113: 462 N 27 '15

**Peace and mediation**

Organized efforts to bring about peace. F. W. Kelsey. *Sci Am* 111:491 D 12 '14

**Personal narratives**

Forests in the Russian war zone. S. Washburn. *Il Am For* 21:755-67 JI '15  
In and out of the Caucasus in war time. L. C. David. *Il Eng & Min J* 99:477-80 Mr 13 '15  
In the wake of war. W. F. Bradley. *Il map Automobile* 33:483-8 Mr 18 '15  
War experiences of an air scout. F. C. Hild. *Il Sci Am* 111:520+; 112:20+, 51+ D 26 '14- Ja 9 '15

**Prison life**

Science in German concentration camps. A. Gradenwitz. *Il Sci Am* 113:10-11 JI 3 '15

**Relief work**

Herbert Clark Hoover and American relief work; abstract. W. Irwin. *Eng & Min J* 99: 243-4 Ja 30 '15  
Herbert Clark Hoover, the rescue specialist. *por Eng & Min J* 99:335-6 My 23 '15  
Motion study for the crippled soldier. F. B. Gilbreth. *Il Am Soc M E J* 37:669-73; Discussion. 37:678-5 D '15  
Stretcher hammock and stretcher chair. N. Truslow. *Il Sci Am* 113:342+ O 16 '15  
Training of the war's maimed, halt and blind. *Il Sci Am* 113:401+ N 6 '15  
See also European war—Medical and sanitary affairs

**Results (forecasts)**

Amateur prophecies. *Sci Am* 113:226 S 11 '15

**Submarine operations**

Missing! *Sci Am* 113:422 N 13 '15  
Submarine as a commerce destroyer. *Il Sci Am* 112:395 My 1 '15  
European war and science  
England's tardy recognition of applied science. W. R. Whitney. *J Ind & Eng Chem* 7:819-22 O '15  
Influence of the war on science. *Sci Am* 113: 462 N 27 '15  
Science in the war and after the war. J. A. Fleming. *Sci Am* S 80:338-9 N 27 '15; Same cond. *Engineer* 120:386-7 O 8 '15  
Evans museum and dental institute. See Pennsylvania. University  
Evanston, Illinois

**Water supply**

Rapid filter plant at Evanston. L. Pearse. *Il plans Am Water Works Assn J* 2:160-79 Mr '15

**Evaporation**

Heat of vaporization of normal liquids. J. Kendall. *diag Am Chem Soc J* 36:1620-30 Ag '14  
Sugar-house evaporating apparatus; abstracts. E. W. Kerr, J. F. Gunther and W. A. Tolsten. *Met & Chem Eng* 13:485-92, 506-7 Ag '15

See also Distillation; Drying

**Evaporators**

Condensers for evaporating apparatus. E. W. Kerr. *diags Met & Chem Eng* 13:551-7 S 1 '15  
Failure of evaporators. W. B. Tardy. *Int. Marine Eng* 20:509-11 N '15

**Évasé stack**

Mechanical draft and the évasé stack. A. M. de Bellis. *diags Eng M* 49:525-34 JI '15

**Evening and continuation schools**

Bit of South America in Wisconsin; the use and flexibility of the continuation school. H. E. Miles. *Am Ind* 15:28 Mr '15  
Pennsylvania's new compulsory continuation schools. H. E. Miles. *Am Ind* 16:28-9 N '15

**Evergreens**

Ornamental evergreens. W. H. Miller. *Il plans Am For* 21:916-21 S '15

See also Coniferae; also names of special evergreen shrubs and trees, e. g. Douglas fir; Fir; Pine

**Evidence**

Verdict of the insects as to time of death. D. Waterson. *Sci Am* 113:11 J1 3 '15

See also Identification

**Evolution**

Some questions of evolution. E. B. Wilson. *Sci Am S* 79:215 Ap 3 '15

See also Variation (biology)

**Examinations.** See Civil service—Examinations; Electric engineering—Examinations; Mining engineering—Examinations

**Excavating machinery**

Albrecht excavator and loader. *Il Concrete Cem* 7:125 S '15

Brownhoist-Shnoble patent drag line bucket. *Il Ry R* 57:249-50 Ag 21 '15; *Eng N* 73:1231-3 Je 24 '15; *Eng & Contr* 43:580-1 Je 30 '15; *Ry Age* 51:25-6 J1 16 '15

Cost of excavating drainage ditches with steam and electric machines. *Eng Rec* 70:704-5 D 26 '14

Dragline cableway excavator. *Il Eng Rec* 70: sup279 D 5 '14

Dragline cableway is an effective tool for sand and gravel plants. *Il Eng Rec* 71:716-18 Je 5 '15

Dragline excavates 70,854 cubic yards per month. *Il Eng Rec* 71:27 Ja 2 '15

Dragline excavator with wagon loader. *Il Eng N* 73:76 Ja 14 '15

Drag-line excavators with high-duty machinery. *Eng Rec* 71:428-30 Ap 3 '15

Drag-line machine for nitrate. J. G. Beck. *Il Eng M* 49:429 Je '15

Dredge walks along over trench. *Il Eng N* 74: 942 N 11 '15

Earth-moving with electric dragline excavators. *Eng N* 73:1183 Je 17 '15

Electric dragline excavates 60,000 yd. in 18 days. *Eng & Min J* 100:882 N 27 '15

Excavating aggregates with drag line and hauling by motor truck on Indiana concrete road work. S. E. Bates. *Il plans Eng & Contr* 44:231-3 S 22 '15

Excavating and backfilling sewer trenches by machine. *Eng Rec* 71:20-1 Ja 2 '15

Excavating machine that walks. *Il diag Sci Am* 113:68 J1 17 '15

Excavating machinery used in land drainage. D. L. Yarnell. *Il diags U S Agric Bul* 300: 1-37 '15

Gasoline engine shovel for light excavation. *Il Eng & Contr* 44:152-3 Ag 25 '15

Home-made clamshell excavator of 1877. L. Goodday. *Il diag Eng N* 74:78-9 J1 8 '15

Largest electric dragline excavator. *Il Eng & Contr* 42:547 D 9 '14

Light power excavators. *Il Sci Am S* 78:405 D 26 '14

McCormick bottomless drag line excavator. *Il Eng & Contr* 44:56 J1 21 '15

Methods and cost of levee enlargement with a tower dragline excavator. *Il diags Eng & Contr* 43:417-20 My 12 '15; Excerpt. *Eng M* 49:598-9 J1 '15

Motor-driven drag-line excavators for constructing headwater diversion channel. *Il Elec W* 65:934 Ap 10 '15

Moving dirt with gasoline. *Il Sci Am* 113:185 Ag 28 '15

Myers-Whaley machines on the Rand. *Il Eng & Min J* 99:150-1 Ja 16 '15

New trenching machines. *Il Eng N* 74:448-9 S 2 '15

New type of grab. *Il Engineer* 118:602-3 D 25 '14

New type of traveling excavator for ditches. W. W. Patch. *Il Eng Rec* 70:643 D 12 '14

Power scraper-excavator. *Il Eng N* 73:542-3 Mr 18 '15

Sewer construction in Chicago, Ill., with a ladder type excavator. S. E. Bates. *Il Munic Eng* 49:188-5 N '15

Stripping with dragline excavators. *Eng & Min J* 100:486-7 S 11 '15

Track-trench excavating machine. *Il Elec Ry J* 46:74 J1 10 '15

Trench excavators; four models—steam, gasoline or electric drive. *diags Munic J* 38:522-3 Ap 15 '15

See also Dredges; Dredging machinery; Electric shovels; Mining machinery; Rock drills; Steam shovels

**Excavation**

City tunnel of the Catskill aqueduct. W. E. Spear. *diags Eng N* 73:148-53 Ja 28 '15

Court decision on the invariability of test boring records. *Eng & Contr* 43:416-17 My 12 '15

Derrick-trolley carries dirt beyond caving banks. M. A. Millitt. *diags Eng Rec* 73:674 N 27 '15

Diagram for computing rock in sewer trenches. C. A. Bryan. *Eng N* 73:1081-2 Je 3 '15

Dragline fills in ahead of itself for its own track. L. C. Heilbronner. *Il Eng Rec* 72:365 S 18 '15

Excavating and timbering the very deep trenches required in reservoir and other dam construction. J. M. M. Greig. *plans Eng & Contr* 44:176-8 S 8 '15

Excavating plant for heavy drainage work in Arkansas. *Il Eng Rec* 71:41 Ja 9 '15

Excavation for foundation of Elephant Butte dam. E. H. Baldwin. *Il diags plan Eng N* 73:49-54 Ja 14 '15

Hydraulic mining cartridge. J. Tonge. *Il diags Sci Am S* 79:186-8 Mr 6 '15

Method of excavating for the foundation of a bank building in Stockholm, Sweden. K. P. Billner. *diags Eng & Contr* 44:112 Ag 11 '15

Methods and cost of levee enlargement with a tower dragline excavator. *Il diags Eng & Contr* 43:417-20 My 12 '15

Methods of excavation for buildings. A. B. McDaniel. *Il diags Eng Rec* 71:68-71; tables p 69, 71 Ja 16 '15

Misleading boring records are grounds for recovery of damages by contractors. *Eng Rec* 71:554-5 My 1 '15

New York rapid transit railway extensions. F. Lavis. *Il diags Eng N* 72:1104-9 D 3 '14

Preliminary estimating of canal excavation. L. M. Hammond. *Eng Rec* 71:146-7 Ja 30 '15

Stripping of gravel pits by hydraulic methods. W. H. Wilms. *diags Ry Age* 58:1430-3 Je 18 '15

Task and bonus work applied to excavation. *Concrete Cem* 5:243 D '14

See also Blasting; Dredging; Earthwork; Electric shovels; Excavating machinery; Shaft sinking; Street openings; Subways; Subways (streets); Trenches; Tunnels and tunneling

**Cost**

Conditions determining maximum grades and methods and cost of road grading in West Virginia. A. D. Williams. *Eng & Contr* 43: 16-17 Ja 6 '15; Excerpt (Cost of grading and excavating). *Concrete Cem* 5:267-8 D '14

Cost of excavating abutments and wing-walls for a street bridge. H. R. Ferriss. *Eng & Contr* 44:14 J1 7 '15

Cost of excavating drainage ditches with steam and electric machines. *Eng Rec* 70:704-5 D 26 '14

Cost of initial mining excavations. E. D. Gardner. *Assn Eng Soc J* 54:210-19 My '15

Cost of mine openings. E. D. Gardner. *Eng & Min J* 100:791-4 N 13 '15

Costs of electric shovel work at Cleveland. *Il Elec Ry J* 44:1261-2 D 5 '14; Same. *Elec R & W Elec'n* 66:172-3 Ja 23 '15

Ditch dug with dynamite at 15 cents per cubic yard. *Eng Rec* 72:673 N 27 '15

Dredges and excavating machinery. H. W. Rogers. *Am Inst E E Pro* 34:3035-9 D '15

Earth excavated for less than six cents per yard in District no. 9, Mississippi county, Arkansas. *Eng Rec* 71:176 F 6 '15

Excavation by Cleveland railway co. *Il Ry R* 56:67-3 Ja 9 '15

Methods and costs of electric shovel work removing slides and side cutting for electric railway. *diags Eng & Contr* 43:154-5 F 17 '15

Methods of excavation for buildings. A. B. McDaniel. *Il diags Eng Rec* 71:68-71; tables p 69, 71 Ja 16 '15

Operation analysis of new machines which cheapen the moving of earth on road work. A. B. McDaniel. *Il Eng Rec* 72:126-8 J1 31 '15

Rapid trench excavation at Canadian camp follows war's call. *Il Eng Rec* 71:182 F 6 '15

Reducing the cost of drainage excavation. *Eng Rec* 70:693-4 D 26 '14

Trench spoil moved cheaply by tractor-trailer trains. *Il Eng N* 74:842-3 O 28 '15

- Excavation—Cost—Continued**  
Unit costs of and organization for building site excavation. W: W. Hay. Eng & Contr 43:453-4 My 19 '15  
Unit costs of steam shovel work in Cuba. J. M. Bischoff. Eng & Contr 44:276-8 O 6 '15  
See also Earthwork—Cost
- Excavation, Subaqueous**  
Subaqueous rock excavation. C: C. Phelps. II Eng N 74:968-73, 1020-4, 1062-7 N 18-D 2 '15  
Exclusive agencies. See Sales
- Executive's problem; an analysis of what is involved in different forms of management.** G: D. Babcock. Iron Age 96:419 Ag 19 '15
- Exhaust fans. See Fans, Exhaust**
- Exhaust steam**  
Combination electric heating plant, Laramie, Wyo. A. E. Anderson. II Power 42:602-5 N 2 '15  
Commercial value of exhaust steam. A. L. Johnston, Jr. Eng M 49:327-33 Je '15  
District heating with open heater. T: Wilson. II plan Power 43:44-7 J 13 '15  
Does it take a greater amount of heat initially to heat with live steam than with exhaust steam? L. N. Evans. Heat & Ven 12:39-43 Ja '15  
Engine condensation, with particular reference to exhaust steam heating. P. West. diags Heat & Ven 12:46-8 Mr '15  
Exhaust steam turbine practice. C. A. Tupper. II Iron Tr R 55:1031-5+ D 3 '14  
Exhaust steam turbines. II Colliery 35:619-20 Je '15  
Five hundred kilowatts from exhaust of hoisting engine. T: Wilson. II diags plans Power 42:143-6 Ag 3 '15  
Freeing condensed steam from oil. Sci Am 112:325+ Ap 3 '15  
Heating value of exhaust steam. D: M. Myers. Eng M 49:712-17 Ag '15  
Heating value of exhaust steam. D: M. Myers. Sch Mines Q 36:40-7 N '14  
How much is exhaust steam worth? G. D. Crain, Jr. Power 40:811 D 8 '14  
Miter coils for exhaust steam heating. A. G. Solomon. diag Power 42:506 O 12 '15  
Modern practice in heating and ventilation. A. G. King. diags Dom Eng 72:102-4 J 24 '15  
Ordinary wastes in the power plant. C: L. Hubbard. plans Eng M 49:809-17 S '15  
Possible economies from the use of exhaust steam in a water gas plant. S. A. Reinhard and C. A. Schnerr. II plan Am Gas Light J 102:235-30 Ap 12 '15  
Pressure survey study constituting a report on the comparative use of exhaust and live steam for heating. C. C. Wilcox. diag plans Heat & Ven 12:23-32 Ag '15; Abstract. Elec R & W Elec'n 66:1120 Je 12 '15  
Problems in power-plant design. (Engineers' study course) C: L. Hubbard. Power 41:56-8 Ja 12 '15  
Selling exhaust steam versus operation condensing. Elec W 65:1556 Je 12 '15  
1250 kw mixed pressure turbo-generator; abstract. F. Schulte. Am Soc M E J 37:851-2 N '15  
Use of steam from the receiver of a compound engine. A. Beurrienne. Am Soc Heat & V E 19:228-43 '13  
Utilization of exhaust steam. diags Sci Am S 80:277 O 30 '15  
Utilization of waste heat for the generation of electrical energy. H. Hobson. diag Inst E E J 53:844-5 Je 15 '15  
Vacuum steam heating, mechanical systems and the thermostatic valve. A. G. King. diags Dom Eng 72:310-12 S 11 '15  
Watt turbo-generator on elevator load in the Lumber exchange building, Chicago. II diags Power 42:717-20 N 23 '15  
Washington avenue power plant, Scranton, Penn. W. O. Rogers. Power 41:875 Je 29 '15  
What is exhaust steam worth? E. Brown. Power 42:155 Ag 3 '15  
What is exhaust steam worth? R. McCarthy. Power 42:242 Ag 17 '15  
Exhaust systems. See Dust removal; Waste removal
- Exhibitions**  
Seattle industrial exhibit. II Iron Age 96:194-5 J 1 22 '15  
See also San Diego—Panama-California exposition; San Francisco—Panama-Pacific international exposition; also subdivision Exhibitions under names of subjects, e. g. Machinery—Exhibitions
- Exits (building)**  
Inclined walkways replace stairs and elevators in new Victor building at Camden, N. J. II plans Eng Rec 72:656-7 N 27 '15
- Expansion (heat)**  
Temperature coefficient of expansion of petroleum residuum. H. Rossbacher. diag J Ind & Eng Chem 7:577-8 J 1 '15
- Expansion joints. See Concrete construction—Expansion joints; Pavements—Expansion joints**
- Explorers**  
Light reading for polar explorers. Sci Am 112:262 Mr 20 '15
- Explosions**  
Cereal dust explosions. D: J. Price. Colliery 35:871-2 J 1 '15  
Decomposition of ammonia and the chances of explosions. F. L. Fairbanks. Power 42:715-17 N 23 '15  
Explosibility of grain dusts. D: J. Price and H. H. Brown. Sci Am S 78:388 D 5 '14  
Explosion in Pasadena septic tank. II Metal Work 84:464 O 8 '15  
Explosion leaves grain elevator practically intact. II Eng Rec 72:119-20 J 24 '15  
Explosion of a small hot water heater in a garage. II Locomotive 30:170-2 Ap '15  
Explosion of hot-water tank. H. E. Collins. II diag Power 41:451-2 Mr 30 '15  
Explosion of kerosene lamps. Sci Am S 79:92 F 6 '15  
Explosion of picric acid. A. Cooper-Key. Engineer 119:155 F 12 '15  
Explosions in air liquefaction plants and their causes; abstract. W. Bramkamp. Am Soc M E J 37:401-3 J 1 '15  
Explosives and accidents. Engineer 120:299 S 24 '15  
Gas explosions in boiler furnaces. diags Power 41:553-4, 651-3, 719, 785-6 Ap 20, My 11, 25, Je 8 '15  
Gas explosions in boilers. R. Trautschold. Power 42:650-2 N 9 '15  
Gaseous explosions. D. Clerk. Sci Am S 79:288 My 1 '15  
Preventing cupola explosions. F. Osswald. II diag Iron Tr R 55:1228+ D 31 '14  
Septic tank explosion at Florence, N. C. M. Maffitt. Eng N 73:410-11 F 25 '15  
See also Boiler explosions; Coal dust; Coal mines and mining—Accidents and explosions; Explosives; Flywheel explosions; Mine explosions; Safety lamps; Sewer explosions
- Explosives**  
Cellulose for explosives. Engineer 120:275-6 S 17 '15  
Chemical engineering in nitrocellulose manufacture. S. L. Stadelman. Met & Chem Eng 13:361-6 Je '15  
Coal-tar products used in making explosives. C. G. Storm. U S Bur Mines Tech Pa 89:16-17 '15  
Contributions of the chemist to the explosives industry. C: E. Munroe. J Ind & Eng Chem 7:945 N '15  
Dynamite does not shoot down. Colliery 35:546-7 My '15  
Efficiency of explosives. A. Stettbacher. Sci Am S 80:219 O 2 '15  
Explosives and accidents. Engineer 118:531-2 D 4 '14  
Explosives as an aid to engineering. C: E. Munroe. Am Soc M E J 37:705-7 D '15  
Explosives for driving concrete piles. F. T. James. Eng N 74:558-9 S 16 '15  
Explosives from tar. Am Gas Light J 102:279, 282 My 3 '15  
Explosives from tar products. V. B. Lewis. Am Gas Light J 102:197 Mr 29 '15  
Explosives used in war and metal mining. P. E. Barbour. Eng & Min J 100:507-11 S 25 '15  
Freezing point of low freezing explosives. A. La Motte. Colliery 35:317 Ja '15

**Explosives—Continued**

- High explosives. L. S. Marsh. *Il W Soc E J* 20:153-82 F '15; Same. *Sci Am S* 80:104-5 Ag 14 '15; Discussion. *W Soc E J* 20:162-71 F '15
- High explosives vs. dyestuffs. *Textile World* 48:528-9 F '15
- Liquid air as an explosive; abstract. M. Przyborski. *Am Soc M E J* 37:341-2 Je '15
- Permissible explosives tested prior to March 1, 1915. S. P. Howell. *U S Bur Mines Tech Pa* 100:1-14 '15
- Primer on explosives for metal miners and quarrymen. C. E. Munroe and C. Hall. *diag pla U S Bur Mines Bul* 80:1-117 '15
- Production and distribution of explosives in the United States during the calendar year 1914. A. H. Fay. *tables U S Bur Mines Tech Pa* 107:1-14 '15
- Tolerances in tests of permissible explosives. *J Ind & Eng Chem* 7:716-17 Ag '15
- See also* Ammunition; Blasting; Inflammable mixtures; Torpedoes

**Storage**

- Safe distance for powder houses. *Eng N* 74: 754 O 14 '15; Same. *Eng & Min J* 100:842 N 20 '15

**Transportation**

- Annual report of Bureau of explosives. *Ry Age* 58:792 Ap 9 '15
- Safe transportation of small-arms ammunition. *Il Sci Am* 112:589-90 Je 12 '15

**Explosives, Military**

- Blowing up barbed wire entanglements: the poles bearing explosives used by the French, Russian and English armies. *Il Sci Am* 111: 468-9 D 5 '14
- European war from an engineer's standpoint. J. B. C. Kershaw. *Il Eng M* 49:43-50 Ap '15
- High explosives in warfare. W. Macnab. *Sci Am S* 79:117 F 20 '15
- Military explosives; their chemistry, preparation and action. *Sci Am S* 80:160-1, 166-7 S 4-11 '15
- Modern munitions of war. V. Lowes. *Engineer* 120:69 J1 16 '15
- Munitions of the present war. *Ry R* 57:373-5 S 18 '15
- Properties and uses of military explosives. L. Cresap. *Iron Age* 96:752-3 S 30 '15
- Trinitrotoluene in the war. *Sci Am S* 79:171 Mr 13 '15
- Use of cotton for the production of explosives. *Sci Am S* 80:271 O 23 '15
- What happens when gunpowder explodes. *Sci Am S* 79:246 Ap 17 '15

**Export trade**

- American goods for Australian use. J. P. Bray. *Metal Work* 83:351 Mr 5 '15
- American international corporation organize to promote foreign trade. *Elec W* 66:1180-1 N 27 '15
- American pipe and fittings in South Africa. *Iron Age* 96:1230-1 N 25 '15
- Big financial concern to aid foreign trade. *Ry R* 57:705 N 27 '15
- Consular recommendations on South American trade. *U S Bur For & Dom Com misc ser* 20:1-29 '15
- Consular service in business getting. *Iron Age* 96:526-7 S 2 '15
- Co-operation in developing foreign trade. W. N. Dickinson. *Metal Work* 82:734 D 4 '14
- Export movement set forward at St. Louis. *Iron Age* 95:246-51+ Ja 28 '15
- Export possibilities. P. Hough. *Textile World* 49:233-5 My '15
- Export price records. H. A. Russell. *Iron Age* 96:1114-15 N 11 '15
- Export trade and how to get it. G. F. Bagge-Féron. *Dom Eng* 70:111-13 Ja 23 '15
- Export trade and how to get it. G. F. Bagge-Féron. *Elec R & W Elec'n* 66:86-8, 123-6, 161-4 Ja 9-23 '15
- Federal commission hearings bring out weaknesses in export trade. *Automobile* 32:1046-7 Je 10 '15
- Hints for American exporters. F. Schreiberman. *Eng M* 49:662-71 Ag '15
- How to secure foreign trade. F. Schreiberman. *Eng M* 49:900-5; 50:86-92, 293-300 S-N '15
- How to sell to Latin-America. A. Del Mar. *Il Eng M* 50:341-56 D '15

- In time of war, prepare for trade. D. Wells. *Iron Tr R* 57:998-9 N 18 '15
- Limitations on association activities in developing export trade. P. T. Cherington. *Textile World* 49:217-19 My '15
- Meeting of the 2d National foreign trade convention. *Elec W* 65:263-4 Ja 23 '15
- Metal-working machinery April exports show \$2,000,000 increase or 150 per cent. *Iron Age* 95:1346-7 Je 17 '15
- Selling railway supplies to European countries. W. S. Hiatt. *Il Ry Age* 59:901-4 N 12 '15
- Trade commission gathering views on export combinations. *Ry R* 57:704-5 N 27 '15
- What business asks of trade commission. *Iron Age* 95:1293-4 Je 10 '15
- See also* South America—Commerce; United States—Commerce

**Express companies**

- Express companies granted higher rate. *Ry Age* 59:214-15 J1 30 '15
- Meeting the problems of the express companies. B. D. Caldwell. *Ry Age* 58:367-9 F 26 '15
- Minnesota express rate case. R. H. Tucker. *J Account* 19:107-17 F '15
- Railway revenue and the parcel post. V. L. Bradley. *Eng M* 48:593-6 Ja '15
- Statistics of express companies for 1914. *Ry Age* 58:1053 My 21 '15
- See also* Parcel post

**Express rates. See Express companies****Extensometers**

- Effect of the end connections on the distribution of stress in certain tension members. C. Batho. *Il diag J Fr Inst* 180:129-72 Ag '15; Abstract (Tests prove lug angles valueless for insuring uniform stress distribution). *Eng Rec* 72:512-14, 608 O 23, N 13 '15
- Fixing the elastic limit standard. T. D. Lynch. *Il Iron Tr R* 57:79-81+ J1 8 '15

**Extra crew laws. See Railroad law****Eye**

- Brightness-difference sensibility of the eye under various brightness of test-fields and surroundings. P. W. Cobb. *J Fr Inst* 180: 235-7 Ag '15
- Colored glasses for eye protection. M. Luckiesh. *Iron Tr R* 57:437-8 S 2 '15
- Effect of ultra-violet rays on the eye. *Sci Am* 113:323 O 9 '15
- Effect on the eye of ultra-violet light. W. E. Burge. *Il diag Elec W* 65:912-14 Ap 10 '15; Abstract. *Sci Am S* 80:345 N 27 '15
- Efficiency of the eye under different conditions of lighting; the effect of varying the distribution factors and intensity. C. E. Ferree and G. Rand. *Il Illum Eng Soc* 10:407-47 no 6 '15
- Eye and illumination. H. E. Mahan. *Gen Elec R* 18:268-72 Ap '15
- Eye protection for grinders and machinists. H. W. Davie. *Il Mach* 21:570-1 Mr '15
- Further experiments on the efficiency of the eye under different conditions of lighting. C. E. Ferree and G. Rand. *Il plan Illum Eng Soc* 10:448-501 no 6 '15
- Illumination and the human eye. *Elec W* 65: 624-5 Mr 6 '15
- Minimum visual angle. *Sci Am S* 80:93 Ag 7 '15
- Mode of action of ultra-violet radiation in injuring the refracting media of the eye. W. E. Burge. *J Fr Inst* 180:477-8 O '15
- Proper eye protection. W. B. McKibbin. *Il Mach* 21:296 D '14
- Résumé of the physical, physiological and psychic phases of vision. N. M. Black. *diag Illum Eng Soc* 10:562-86 no 7 '15
- Retinal sensibilities related to illuminating engineering. P. G. Nutting. *J Fr Inst* 180:482-4 O '15
- Searching for a reason for eye fatigue. M. Luckiesh. *Elec W* 66:576-8 S 11 '15
- See also* Color blindness; Eyestrain; Goggles; Light; Spectacles

**Eyestrain**

- Efficiency of the eye under different conditions of lighting; the effect of varying the distribution factors and intensity. C. E. Ferree and G. Rand. *Il Illum Eng Soc* 10:407-47 no 6 '15

**Eyestrain—Continued**

- Ferree test for eye fatigue; with discussion. J. R. Cravath. *Illum Eng Soc* 9:1033-59 no 9 '14
- Further experiments on the efficiency of the eye under different conditions of lighting. C. E. Ferree and G. Rand. *Illum Eng Soc* 10:448-501 no 6 '15
- Life-study of patients. G. M. Gould. *Sci Am* 8:79:226-7 Ap 10 '15
- Light and the human machine. *Illum Engr* 8:335-8 Ag '15

**F****Factories**

- Dry rot in factory timbers. F. J. Hoxie. *Eng Rec* 71:336-7 Mr 13 '15
- Economical design of factory buildings. W. E. King. *Assn Eng Soc J* 53:293-307 Je '14; Same cond. *Ind Eng* 14:289-93 Jl '14; Same cond. *Eng & Contr* 42:133-41 Ag 5 '14; Same cond. *Eng M* 48:91-5 O '14; Same cond. *Mach* 21:341-4 D '14; Discussion (Track layouts for industrial plants). G. H. Herrold. *Assn Eng Soc J* 52:307-10 Je '14; Same. *Eng N* 72:357 Ag 13 '14
- Economical system of construction; suggested design for factory or warehouse. H. E. Barr. *Illum Eng Soc* 95:885-7 Ap 22 '15
- Efficient planning in mercantile structures: the Kuppenheimer factory building, Chicago, Ill. *Illum Eng Soc* 95:885-7 Ap 22 '15
- Factory built at 60 cents per square foot: the Hart & Hutchinson plant at New Britain, Conn. *Illum Eng Soc* 95:231-3 Ja 28 '15
- Faucet manufacturing plant, Chicago. *Illum Eng Soc* 95:231-3 Ja 28 '15
- Inclined walkways replace stairs and elevators in new Victor building at Camden, N. J. *Illum Eng Soc* 95:231-3 Ja 28 '15
- Logic of the one story factory. G. D. Crain, Jr. *Iron Tr R* 57:138-41 Jl 15 '15
- Making sprocket chain without waste. *Illum Eng Soc* 95:1105-9 My 30 '15
- Manufacture of the Diesel engine: production processes and the plant of the Busch-Sulzer bros., St. Louis. O. J. Abell. *Illum Eng Soc* 95:57-64 Ja 7 '15
- Methods and costs in constructing factory building at Houston, Texas. L. A. Hoyne. *Illum Eng Soc* 95:57-64 Ja 7 '15
- Model factory building for small plants. *Illum Eng Soc* 95:188-91 Ja 21 '15; Same. *Metal Work* 83:274-6 F 12 '15; Same. *Eng & Contr* 43:144-5 F 17 '15
- New plant of the Crane co., Chicago. *Illum Eng Soc* 95:179-81 Ja 21 '15
- Plant with heavy tools on concrete piling. *Illum Eng Soc* 95:179-81 Ja 21 '15
- Prevention of dry rot in mill buildings. F. J. Hoxie. *Illum Eng Soc* 95:179-81 Ja 21 '15
- Reducing the fire hazard in a factory. H. A. Russell. *Illum Eng Soc* 95:179-81 Ja 21 '15
- Rehabilitation of existing plants as a factor in production costs. H. V. Coes. *Illum Eng Soc* 95:179-81 Ja 21 '15
- Reinforced concrete factory buildings; abstracts. F. W. Dean. *Am Soc M E J* 37:9 Ja '15; *Iron Tr R* 56:518-41 Mr 11 '15; Discussion. *Am Soc M E J* 37:9-11 Ja '15
- Treated timber for factory construction. F. J. Hoxie. *Eng Rec* 71:107-8 Ja 23 '15; Same. *Eng & Contr* 43:563-4 Je 23 '15; Same cond. *Eng M* 48:896-8 Mr '15
- Value of preliminary sketches and layouts in production work. A. A. Dowd. *Illum Eng Soc* 95:232-4 S 1 '15
- Wide column spacing effects economy in factory floor area. E. W. Stern. *Illum Eng Soc* 95:232-4 S 1 '15

See also Automobile factories; Cotton mills; Factory laws; Factory management; Iron works; Knitting mills; Loff buildings; Mills and millwork; Steel works; Textile mills; Water supply for factories

**Heating and ventilation**

- Combined heating and sprinkler system for a factory building; Wheelock, Lovejoy & co., Cambridge, Mass. C. L. Hubbard. *Illum Eng Soc* 95:232-4 S 1 '15

- Factory building equipped with outside air ducts. *Illum Eng Soc* 95:232-4 S 1 '15
- Factory with down ventilation through columns. *Illum Eng Soc* 95:232-4 S 1 '15
- Heating and ventilating a factory building. *Illum Eng Soc* 95:232-4 S 1 '15
- Heating and ventilating factories. *Illum Eng Soc* 95:232-4 S 1 '15
- Heating and ventilating industrial plant. J. H. O'Brien. *Illum Eng Soc* 95:232-4 S 1 '15
- Heating and ventilating system of American cigar co.'s plant. W. L. Durand. *Illum Eng Soc* 95:232-4 S 1 '15
- Heating and ventilating system that conserves the comfort of 15,000 workers at the Ford plant in Detroit. *Illum Eng Soc* 95:232-4 S 1 '15
- Measure of comfort in factories; construction and use of the katathermometer. J. A. Seager. *Illum Eng Soc* 95:232-4 S 1 '15
- Model factory building for small plants. *Illum Eng Soc* 95:188-91 Ja 21 '15; Same. *Metal Work* 83:274-6 F 12 '15; Same. *Eng & Contr* 43:144-5 F 17 '15
- Relation of windows and ventilation in factory buildings. *Illum Eng Soc* 95:232-4 S 1 '15
- Ventilation of industrial plants. C. T. Graham-Rogers and W. T. Doyle. *Metal Work* 83:283-4 F 19 '15; Same. *Dom Eng* 71:4-5 Ap 3 '15
- Ventilation standards for factories. *Iron Age* 95:233 Ja 28 '15

**Lighting**

- British government committee reports on factory lighting. *Elec R & W Elec'n* 67:810-11 O 30 '15
- Code for better industrial lighting. C. E. Clewell. *Illum Eng Soc* 95:1185-7 N 20 '15
- Efficient lighting for industrial workers. F. Schwarze. *Illum Eng Soc* 95:662-4 My 7 '15
- Examples of modern factory lighting by gas. *Illum Eng Soc* 95:662-4 My 7 '15
- Factory lighting. G. H. Stickney. *Gen Elec R* 18:67-71 Ja '15; Same cond. *Eng M* 48:912-15 Mr '15; Same cond. *Sci Am* 57:363 Je 5 '15
- Factory lighting by high pressure gas. A. E. Broadberry. *Illum Eng Soc* 95:1185-7 N 20 '15
- Factory lighting; with discussion. O. R. Hogue and A. O. Dicker. *Illum Eng Soc* 95:1185-7 N 20 '15
- First report of the departmental committee on the lighting of factories and workshops. *Illum Eng Soc* 95:1185-7 N 20 '15
- Industrial lighting by mercury vapour lamps. *Illum Eng Soc* 95:1185-7 N 20 '15
- Light and the human machine. *Illum Eng Soc* 95:1185-7 N 20 '15
- Light as a factor of efficiency. W. A. D. Evans. *Illum Eng Soc* 95:1185-7 N 20 '15
- Lighting in factories and workshops. *Engineer* 120:262 S 10 '15
- Lighting of factories and workshops. *Illum Eng Soc* 95:1185-7 N 20 '15
- Overhead shop lighting. *Illum Eng Soc* 95:1185-7 N 20 '15
- Problem of mill lighting. *Textile World* 50:81-5 O 15 '15
- Suggested code of lighting for factories, mills and other work places in the United States. *Illum Eng Soc* 95:1185-7 N 20 '15

**Location**

- Effect of climate on location of manufacturing plants. W. M. Booth. *Sci Am* 57:363 Je 5 '15
- Problems involved in industrial pioneering. L. L. Anthes. *Foundry* 43:82-3 F '15
- Rehabilitation of existing plants as a factor in production costs. H. V. Coes. *Illum Eng Soc* 95:1185-7 N 20 '15
- Factory hospitals. See Hospitals, Factory
- Factory laws
- Existing requirements regarding lighting in factories, schools, etc., in various countries. *Illum Eng Soc* 95:1185-7 N 20 '15
- How state laws compel removal of dust. H. C. Estep. *Illum Eng Soc* 95:1185-7 N 20 '15
- Modern sanitation in factories. J. Graham. *Illum Eng Soc* 95:1185-7 N 20 '15
- See also Foundry laws

**Factory management**

- Balancing production with sales. C. W. Thayer. Mach 21:368 Ag '15
- Checking freight charges. P. A. Smith. Iron Age 95:586 Mr 4 '15
- Economies of a manufacturing plant. J. S. Branne. Assn Eng Soc J 54:53-62 F '15
- Eisemann's train-dispatcher system. J. E. Schipper. II plans Automobile 32:580-5 Ap 1 '15
- Factory cleanliness—its meaning, application and results. J. D. Hackett. Ind Eng 15:54 F '15
- Ford methods and the Ford shops. H. L. Arnold; F. L. Faurote. II Eng M 47:179-203, 331-58, 507-82, 867-86; 48:35-60, 338-66, 524-50, 704-21, 859-76; 49:67-87, 184-201, 372-98 My-O, D '14-Je '15
- Four-part factory inventory system. H. A. Russell. Iron Age 95:1218-25 Je 3 '15
- Handling of repair work in the factory. A. A. Dowd. Iron Age 95:394-5 My 6 '15
- How to organize your night force. H. C. White. Iron Tr R 56:1056-8 My 27 '15; Same. Iron Age 95:1174-6 My 27 '15; Same. Ind Eng 15: 95-7 S '15
- How to use statistics in management. F. G. Coburn. Eng M 49:717-23 Ag '15
- Increased efficiency. A. A. Dowd. Sibley J 29: 157-63 F '15
- Industrial fatigue; abstract of report to the British association. Engineer 120:292 S 24 '15
- Industrial safety and principles of management. W. P. Barba. Am Soc M E J 37:692-5 D '15; Same cond. Iron Age 96:1232-4 N 25 '15
- Locating an executive in the factory. H. A. Russell. plan Iron Age 95:344-5 F 11 '15
- Measurement of efficiency. H. L. Gantt. Iron Tr R 55:1131-3 D 17 '14; Same. Ind Eng 14: 463-5 D '14; Same. Iron Age 94:1320-1 D 3 '14; Same. Automobile 31:1104-5 D 17 '14; Same cond. Ry Age (Mech ed) 89:249-51 My '15; Same cond. Metal Work 83:725-6 My 31 '15; Abstract. Eng M 48:577-80 Ja '15; Abstract; with discussion. Am Soc M E J 37:11-13 Ja '15
- More about the human factor. D. M. Myers. Eng M 49:301-8 S '15
- Ordering tools and supplies in the factory. P. W. Blair. Mach 21:745 My '15
- Panic economies and emergency problems with especial reference to the present industrial situation. F. A. Waldron. Am Soc M E J 36:413-17 D '14; Same cond. Ind Eng 14: 397-400 O '14; Discussion. Am Soc M E J 36:417-19 D '14
- Preventing losses in factory power plants. S. J. H. White. Iron Age 95:777-9, 848-9 Ap 8-15 '15
- Reduction of power costs in a factory power plant. T. K. Roberts. diags Ind Eng 14:445-50 D '14
- Relation between production and costs. H. I. Gantt. Am Soc M E J 37:466-8 Ag '15; Same. Am Gas Light J 103:54-5 Jl 26 '15; Same. Iron Age 96:16-18 Jl 1 '15; Same. Iron Tr R 57:267-8+ Ag 5 '15; Same. Mach 21:1000-2 Ag '15; Same. Textile World 49:510-13 Ag '15; Discussion. Am Soc M E J 37:468-75 Ag '15; Abstract of discussion. Iron Age 96:24-5 Jl 1 '15
- Relation of the inspection department to the management. F. B. Corey. Ind Eng 15:17-18 Ja '15; Same. Iron Age 95:566-7 Mr 11 '15
- Results of factory standardization. C. B. Auel. II diags Iron Tr R 57:125-30 Jl 15 '15; Abstracts. Iron Age 94:1280-2 D 3 '14; Ind Eng 14:458-60 D '14; Am Soc M E J 37:13-15; Discussion. 37:15-16 Ja '15
- Routing—schedule and despatch. G. D. Babcock. II Ind Eng 14:427-31 N '14
- Scientific management for the factory of moderate size. D. T. Farnham. Eng M 50:46-51 O '15
- Shop system of the American machine & foundry co. H. K. Hammond. diags Mach 21:446-50 F '15
- System in a factory stock department. G. H. Culver. II Eng M 49:174-83 My '15
- Value of preliminary sketches and layouts in production work. A. A. Dowd. diags Horseless Age 36:232-4 S 1 '15
- Value of specialization in factory. A. A. Dowd. II diags Iron Tr R 57:259-68 Ag 5 '15

Waste in hiring and discharging employees. M. W. Alexander. Sci Am S 79:102-3 F 13 '15; Same cond. Am Gas Light J 103:43-4 Jl 19 '15; Abstract. Iron Age 94:1032-3 O 29 '14; Abstract. Metal Work 82:609-10 N 6 '14; Abstract. Eng M 48:733-6 F '15

See also Cost accounting; Employees; Employment systems; Factory restaurants; Mechanical handling; Purchasing; Records; Routing systems; Scientific management; Shop management; Stores systems; Time study; Welfare work in industry

**Factory mutual companies**

Insurance methods for payment of large losses. J. P. Gray. Textile World 49:228-30 My '15

**Factory restaurants**

Eliminating the dinner bucket. E. W. Pargny. II Iron Tr R 55:1089-91 D 10 '14

**Factory sanitation**

Industrial betterment. F. E. Cardullo. II Mach 22:175-9 N '15

Modern sanitation in factories. J. Graham. II diags Dom Eng 69:393-7 D 26 '14

Toilet regulations for industrial establishments: report of committee. Boston Soc C E J 2:79-89 F '15; Same cond. (Sanitation in shops and factories) Eng M 49:100-1 Ap '15

See also Dust removal; Factories—Heating and ventilation; Foundry sanitation; Toilet rooms; Water supply for factories

**Factory towns. See Model towns**

Factory waste. See Refuse and refuse disposal; Trade waste

Fairport, New York

**Bridges**

Lift bridge constructed on 4 per cent. grade. C. R. Waters. II Eng N 73:705-6 Ap 15 '15

**Fall River, Massachusetts****Bridges**

Fall River bridge. J. W. Rollins. II diags Boston Soc C E J 1:67-81 F '14

**Sanitary affairs**

Fall River mills will benefit by \$3,000,000 water and sewerage project. diag Eng Rec 72:501-3 O 23 '15

New water-conservation scheme at Fall River, Mass. diag Eng N 74:760-1 O 14 '15

**Water supply**

Fall River's proposed water supply system. II diag Sci Am 113:353+ O 23 '15

Plan for condensing-water supply for Fall River. H. S. Knowlton. plan Power 42:643-4 N 9 '15

**Family resemblances. See Heredity****Fancy work**

See also Knitting

**Fans, Electric**

Electric fans in the winter: installed in the cold-air intakes of furnaces to increase temperature and reduce coal consumption. F. W. Gumaer. plans Elec W 65:229-31 Ja 23 '15; Abstract. Ind Eng 15:79 Ag '15; Abstract. Heat & Ven 12:46-7 S '15

Gyrating fans. II Elec W 66:1110 N 13 '15

New departure in electric-fan construction. II Elec R & W Elec'n 66:313-14 F 13 '15

Running a fan economically. Colliery 35:398 F '15

Westinghouse electric fans for 1915. II Elec R & W Elec'n 66:265-9 F 6 '15

**Fans, Exhaust**

Exhaust fan ratings and pipe diameters. Metal Work 83:721-2 My 21 '15

**Fans, Mechanical**

British Portland cement making machinery: application of fans. II diags Engineer 120: 102-5 Jl 30 '15

Fan trouble solved by ball bearings. F. E. Rogers, Jr. II diag Textile World 49:569-71 Ag '15

Fans for ventilating work. C. L. Hubbard. Eng M 48:385-92 D '14; Same. Eng & Contr 43:197-9 Mr 3 '15

New ventilating fan and blower. II Power 40: 919 D 29 '14



**Fans, Mechanical—Continued**

- Notes on fans. A. A. Potter and S. L. Simmering. Power 41:816 Je 15 '15  
 Outline specification of ventilating fan. M. B. Smith. Power 42:772 N 30 '15  
 Performance and selection of centrifugal fans. F. L. Busey. Heat & Vent 12:31-7 Ap; 32-5 My '15  
 Problems in power-plant design. (Engineers' study course) C. L. Hubbard. Power 40:320-2 D 3 '14  
 Reduction or elimination of noise attending the operation of mechanical ventilating machinery. R. W. Pryor, Jr. plans Heat & Vent 11:26-9 Ag '14; Same. Iron Age 94:310-11 Jl 23 '14; Same. Metal Work 28:275-6 S 4 '14; Same; with discussion. Am Soc Heat & V E 20:320-9 '14  
 Testing of ventilating fans. T. Bryson. Colliery 35:465-7 Ap '15; Abstract. Am Soc M E J 37:124 F '15  
 Theory and application of centrifugal fans. C. L. Hubbard. Il diags Dom Eng 89:289-91, 357-9; 70:36-7 D 5, 19 '14, Ja 9 '15  
 Theory and practice in warm-air heating. diags Metal Work 84:451-3 O 8 '15  
*See also* Fans, Electric; Mechanical draft

**Far East**

- Winning of the Orient. E. H. Foot. Il Am Ind 15:20-2 Ap '15

**Faraday society**

- 75th ordinary meeting, May 11. Met. & Chem Eng 13:499-501 Ag '15

**Fare registers. See Street railroads—Fare registers****Fares. See Railroads—Fares; Street railroads—Fares****Fargo, North Dakota****Water supply**

- New water works ordinance adopted by referendum. Eng & Contr 43:396 My 5 '15  
 Water-works charges and depreciation at Fargo. Eng N 73:994-5 My 20 '15

**Farm buildings**

- Grouping of farm buildings; examples from the work of Alfred Hopkins. J. J. Klaber. Il plans Arch Rec 37:840-59 Ap '15  
*See also* Dairy houses; Farmhouses; Poultry houses; Stables

**Farm motors**

- See also* Electricity on the farm; Tractors

**Farm produce**

- See also* Cotton; Forest products

**Transportation**

- Hearings on western freight rate advances. Ry Age 58:617-19, 700-2 Mr 19-26 '15  
 Relation of farm produce hauling to permanent road improvements. W. A. McLean. Eng & Contr 42:215-17 Ag 26 '14

**Farm produce, Marketing of**

- Marketing our food products. Sci Am S 78:390 D 19 '14

**Farm tractors. See Tractors****Farmhouses**

- Model design of Minnesota farm house. Il plans Bldg Age 37:38-40 Mr '15  
 Sewage disposal in rural country districts. E. D. Colby. Metal Work 84:341-3 S 10 '15  
 Water supply and sewage disposal. Metal Work 84:398 S 24 '15  
 Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:194-7, 224-6, 254-6, 284-6, 313-15, 338-40 Ag 14-S 18 '15

**Farms. See Demonstration farms****Fastenings**

- Fastenings for stone or steel. H. M. Schember. Il diags Bldg Age 37:69-70 F '15

**Fasting**

- Hunger strikes an aid to good health. M. D. Pearl. diags Sci Am 112:67 Ja 16 '15

**Fat extraction apparatus**

- New apparatus for fat extraction. I. Selester. Il J Ind & Eng Chem 7:371-2 O '15  
 Simple fat extraction tube. C. A. Butt. diags J Ind & Eng Chem 7:180 F '15

**Fatigue**

- How excitement relieves fatigue. Jakobl. Sci Am 118:253 S 18 '15  
 Industrial fatigue; abstract of report to the British association. Engineer 120:292 S 24 '15  
**Fatigue in metals**  
 Endurance of metals under repeated stresses; some new facts, and a new method of testing. diags Locomotive 30:130-42 Ja '15  
 Fatigue and disease of metals. P. Kreuzpointner. Iron Age 95:950-1 Ap 29 '15  
 Fatigue of copper alloys. E. Jonson. Metal Ind n s 13:283-4 Jl '15; Same. Eng Rec 72:22-3 Jl 3 '15; Same, with discussion. Foundry 48:311-12 Ag '15

**Fats. See Oils and fats****Fatty acids. See Acids, Fatty****Faucets**

- Faucet boss problem solved by triangulation. diags Metal Work 84:245-6 Ag 20 '15

**Fecundity**

- Question of increase; how small is the chance that an individual will grow up. Il Sci Am 113:292-3 O 2 '15

**Federal reserve act**

- Aspects of the financial problem of the railways; effect which the Federal reserve act will have on needs of railways for new capital. H. P. Willis. Ry Age 58:999-1002 My 14 '15

- Bank loans under the new conditions: borrowers' certified statements as a basis for national currency. F. G. Colley. J Account 18:418-26 D '14

**Federal reserve banks and the reserve agent.**

- F. B. Snyder. J Account 20:28-33 Jl '15  
 New finance for steel and iron: how the new federal reserve system can be utilized to free business from the handicap of a rigid credit system through the employment of acceptances in liquidation of debt. I. F. Marcosson. Il Iron Tr R 56:9-15 Ja 7 '15

**Federal trade commission. See United States—Federal trade commission****Federation of trade press associations**

- 10th annual convention, Philadelphia, Sept. 7-9. Elec R & W Elec'n 67:537 S 18 '15

**Feed water**

- Boiler water and its troubles. C. M. Young. Il Colliery 35:527-8+ My '15  
 Centrifugal boiler-feed pumps. J. E. Kamps. Power 42:693-4 N 18 '15  
 Centrifugal pumps for boiler-feed service. E. S. Adams. Power 40:984-5 D 29 '14  
 Communications from the chemical laboratory of the Bavarian association for boiler inspection; abstract. Am Soc M E J 37:234-5 Ap '15  
 Control for boiler-feed pumps and piping connections. plan Elec W 66:318-19 O 23 '15  
 Farnsworth tilting traps. diags Power 41:90 Ja 19 '15  
 Liquid weigher improved. J. W. Loef. diags Power 41:687-8 My 18 '15  
 Measuring boiler feed water. diags Elec Ry J 46:284 Ag 14 '15  
 Return traps for feeding boilers. K. M. Gilbert. diags Power 41:487-8 Ap 6 '15  
 Saving in the pump room. W. E. Dixon. diags Power 41:171-2 F 2 '15  
 Scientific boiler-feeding. E. W. Nick. Power 41:34-6 Ja 5 '15  
 Simple feed-water recorder. Il Elec Ry J 46:242 Ag 7 '15  
 Stopping pulsations in the feed line. A. A. Wood. diags Power 42:560 O 19 '15  
*See also* Boilers; Feed water heaters; Feed water purification; Feed water regulators; Injectors; Pumps; Pumps, Centrifugal

**Testing**

- Economy of coal and boiler corrosion. G. J. Meyers. Int Marine Eng 20:176 Ap '15

**Feed water heaters**

- Direct-contact feed-water heater. Il Elec W 66:375-6 Ag 14 '15  
 Feed water heater used on geared locomotives. H. S. Johnson. diags Ry Age (Mech ed) 89:226 My '15  
 Feed-water heaters in tandem. Il Power 42:682 N 16 '15

**Feed water heaters—Continued**

- Heat transmission and tube length in marine feed-water heaters; abstract. L. Loeb. *Am Soc M E J* 37:433-7 Ag '15
- Home-made feed-water heater—ways to prevent oily water being drawn by feed pumps. *diags Elec W* 66:1203-4 N 27 '15
- Open feed-water heater. F. F. Jorgensen. *diags Power* 41:441 Mr 30 '15
- Putting gasket in heater. A. G. Solomon. *diag Power* 40:923-9 D 29 '14
- Weir feed water heater for locomotive boilers. *diags Ry R* 57:216 Ag 14 '15

**Feed water heating**

- Barometric condenser used as a water heater. K. M. Gilbert. *plan Power* 42:230 Ag 17 '15
- Basis for rational design of heat transfer apparatus. E. E. Wilson. *Am Soc M E J* 37:546-9; Discussion. 37:549-51 S '15
- Double-tank method of storing hot water. *plan Elec W* 68:24 J1 3 '15
- Economy of heating feed water. C. E. Anderson. *Power* 41:544-5 Ap 20 '15
- Locomotive feed water heating; discussion. H. H. Vaughan; F. F. Gaines. *Ry Age* 58:270-1 F 12 '15; Same. *Ry Age* (Mech ed) 89:12 Ja '15
- Ordinary wastes in the power plant. C. L. Hubbard. *plans Eng M* 49:809-17 S '15
- Saving of fuel on locomotives by the use of feedwater preheating; abstract. Strahl. *diags Am Soc M E J* 37:606-7 O '15
- Waste hot water heats feed-water. F. B. Hays. *diags Power* 41:55-6 Ja 12 '15
- Will Quiz, Jr. *Power* 41:707-8 My 25 '15

See also Feed water heaters

**Feed water pumps. See Pumps, Centrifugal****Feed water purification**

- Bayer feed-water purifier. 11 *diags Power* 41:400-1 Mr 23 '15
- Boiler water and its treatment. C. M. Young. 11 *Colliery* 35:600-4 Je '15
- Distilled feed water. C. F. Hirschfeld. *Eng M* 49:724-30 Ag '15
- Freeing condensed steam from oil. *Sci Am* 112:325-+ Ap 3 '15
- Increased temperature saves two-thirds of the water-softening chemicals. *diag Elec W* 65:480-1 F 20 '15
- Inexpensive method of treating boiler feed water. T. R. Crumley. *diag Elec Ry J* 46:152-3 J1 24 '15
- Method of softening and purifying feed water used by a Brooklyn company. *diags Elec W* 66:413-14 Ag 21 '15
- Purification of boiler feed water. E. Brown. *diag Met & Chem Eng* 13:156-60 Mr '15
- Removing oil from feed water. 11 *Eng M* 50:supl O '15
- Softening plant converts hard, impure river water into boiler feed supply. 11 *Eng Rec* 72:622-4 N 20 '15
- Treatment of water for locomotive use. W. A. Pownall. *Am Water Works Assn J* 2:434-41 Je '15; Same. *Ry R* 56:470-2 Ap 3 '15
- Twin grease extractor for feed water. 11 *Iron Age* 95:244 Ja 28 '15
- Water softener in feed-water treatment. H. R. Dorman. 11 *Power* 42:246-8 Ag 17 '15
- Water softening by electrochemical methods. C. P. Landreth. *Elec W* 64:1257-8 D 26 '14
- Water treatment. L. F. Wilson. *Ry R* 57:9-10 J1 3 '15

See also Feed water heaters

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See also Feed water heaters

**Feed water regulators**

- Automatic control of feed water. *diags Elec W* 66:863-4 O 16 '15
- Eckel hydrostat; feed-water regulator. 11 *Power* 41:466 Ap 6 '15
- Foster automatic feed-water regulator. *diags Power* 41:512 Ap 13 '15
- McDonough automatic feed water regulator. 11 *diag Heat & Ven* 12:54-5 Ja '15; *Iron Age* 95:185 Ja 21 '15; *Power* 41:87 Ja 19 '15

**Feed water strainer**

- Power operated multi-basket strainer. 11 *Iron Age* 96:1055-6 N 4 '15; *Elec W* 66:1108 N 13 '15

**Feeding and feeding stuffs**

- Alcohol and fodder from wood. *Sci Am* 113:361 O 23 '15

Determination of the total fatty acids and other ether-soluble constituents of feed-stuffs. J. B. Rather. *J Ind & Eng Chem* 7:218-20 Mr '15

Ether-soluble matter in the nitrogen-free extract of feed-stuffs. J. B. Rather. *J Ind & Eng Chem* 7:613-15 J1 '15

Feeding mine animals. *Eng & Min J* 100:884 N 27 '15

Inorganic fodder. *Sci Am* 113:8 J1 3 '15

Quantitative determination of the amino acids of feeding-stuffs by the Van Slyke method. H. S. Grindley, W. E. Joseph and M. E. Slater. *Am Chem Soc J* 37:1778-81 J1 '15

See also Cottonseed meal; Ensilage; Forage plants

**Fehling solution**

Volumetric Fehling method using a new indicator. A. M. Breckler. *J Ind & Eng Chem* 7:37-8 Ja '15

**Feldspar**

Feldspar as a possible source of American potash. A. S. Cushman and G. W. Coggeshall. *J Ind & Eng Chem* 7:145-51 F '15; Same. *Met & Chem Eng* 13:99-104 F '15

Fellowships. See Scholarships and fellowships

**Fence posts****Cost**

Determination of annual charge for ties, poles and fence posts. W. F. Goltra. *Ry Age* 58:1087 My 21 '15

**Fence posts, Concrete**

- E. R. & P. concrete sign and post plant. *diags Ry Age* 58:1434-5 Je 18 '15
- Concrete fence post factory of the C. B. & Q. R. R. co., Havelock, Neb. W. W. Eldridge. 11 *Concrete Cem* 6:99-101 F '15
- Concrete fence posts for Lackawanna railway lines. 11 *Concrete Cem* 6:220 Ap '15
- Concrete posts and poles; report to the American railway bridge and building association. G. E. Boyd. *Ry R* 56:360-2 Mr 13 '15
- Design and cost of concrete posts used along Catskill aqueduct. *diags Eng & Contr* 43:287-8 Mr 31 '15
- Practical suggestions given for building wire fences and concrete posts. R. N. Wheeler. *Eng Rec* 72:361-2 S 18 '15

**Fences**

- Design and cost of two types of concrete and metal fence. F. D. Holbrook. 11 *Eng & Contr* 42:489 N 18 '14
- Details of picket and board fences and grape arbor. J. Wavrek, Jr. *diags Bldg Age* 37:82 D '15
- Practical suggestions given for building wire fences and concrete posts. R. N. Wheeler. *Eng Rec* 72:361-2 S 18 '15

See also Fence posts; Railroads—Fences

**Cost**

- Cost of building a rod of fence in North Dakota. *Eng & Contr* 43:554 Je 23 '15
- Cost of fence wire, wood and steel posts. *Eng N* 74:362 Ag 19 '15
- Costs of three types of board fences. 11 *Eng & Contr* 43:446 My 19 '15

**Fences, Concrete**

- 4½ miles of concrete fence flank transit route on Sea beach line improvement in Brooklyn. 11 *Eng Rec* 72:68 J1 17 '15
- Unique concrete fence as constructed in Porto Rico. 11 *plan Concrete Cem* 7:56 Ag '15

See also Motor trucks—Fenders

**Fermentation**

See also Bacteriology; Brewing; Enzymes

**Ferric hydroxide**

Effect of ammonium chloride upon ferric and aluminum hydroxides during ignition. H. W. Daudt. *J Ind & Eng Chem* 7:347-8 O '15

**Ferrochrome**

Manufacture of ferro-alloys in the electric furnace. R. M. Keeney. *U S Bur Mines Bul* 77:127-41 '14; Excerpts. *Iron Tr R* 56:972-5 My 13 '15

**Ferroilmenite**

Ferro-ilmenite arc on alternating-current circuits. I. Ladoff. *Elec R & W Elec'n* 66:871-2 My 8 '15

**Ferromanganese**

Electric furnace and the melting of alloys. R. S. Wile. *Iron Age* 95:1068-9 My 13 '15  
Extraordinary year in ferro. *Iron Tr R* 56:95-6 Ja 7 '15

Manufacture of ferro-alloys in the electric furnace. R. M. Keeney. *U S Bur Mines Bul* 77:141-6 '14; Same. *Iron Age* 95:539-40 Mr 4 '15; Same. *Iron Tr R* 56:765-6 Ap 15 '15

**Ferrophosphorus**

Phosphate rock as furnace flux. J. A. Barr. *Il Iron Tr R* 56:183-5 Ja 21 '15

**Ferro-silicon**

Manufacture of ferro-alloys in the electric furnace. R. M. Keeney. *diags U S Bur Mines Bul* 77:154-74 '14; Same. *Iron Tr R* 56:862-7 Ap 29 '15

**Ferrotungsten**

Manufacture of ferro-alloys in the electric furnace. R. M. Keeney. *U S Bur Mines Bul* 77:177-84 '14; Excerpts. *Iron Tr R* 56:767-+ Ap 15 '15

**Ferrous ferricyanide**

Rhythmical precipitation of ferrous ferricyanide and ferrous hydroxide in jelly. H. J. M. Creighton. *Il Am Chem Soc J* 36:2357-60 N '14

**Ferrous hydroxide**

Rhythmical precipitation of ferrous ferricyanide and ferrous hydroxide in jelly. H. J. M. Creighton. *Il Am Chem Soc J* 36:2357-60 N '14

**Ferrous sulphate**

Oxidation and reduction without the addition of acid; the reaction between ferrous sulfate and potassium dichromate. M. Neidie and J. C. Witt. *Am Chem Soc J* 37:2360-8 O '15

**Ferrovandium**

Determination of manganese in ferrovandium. W. W. Clark. *Met & Chem Eng* 13:155-6 Mr '15

**Ferryboats**

Should ferry service be free? H. M. Chittenden. *Eng N* 74:264 Ag 5 '15  
Southern Pacific ferry steamer Alameda. E. W. Olin. *Il plans Int Marine Eng* 20:194-8 My '15

See also Car ferries

**Fertility. See Fecundity****Fertilizers and manures**

Agricultural fertilizers. *Sci Am S* 79:130 F 27 '15

Agricultural lime. *Sci Am S* 80:112 Ag 14 '15

Availability of organic nitrogen. J. E. Breckenridge. *Il J Ind & Eng Chem* 7:871-3 Ag '15

Bread from stones. C. G. Hopkins. *Sci Am S* 79:223 Ap 3 '15

Can sewage sludge be made valuable as a fertilizer? *Eng N* 73:593 Mr 25 '15

Chemistry of base goods fertilizer. E. C. Lathrop. *J Ind & Eng Chem* 7:223-33 Mr '15

Composition of certain fish fertilizers from the Pacific coast and the fertilizer value of degreased fish scrap. J. R. Lindemuth. *Il J Ind & Eng Chem* 7:615-19 J1 '15

Contributions of the chemist to the fertilizer industry. E. W. Wallace. *J Ind & Eng Chem* 7:281 Ap '15

Cost accounting for fertilizer manufacturers. F. C. Belser. *J Account* 19:165-81 Mr '15

Discovery of radium in coal. *Sci Am* 112:423 My 1 '15

Fertilizer from municipal waste. J. W. Turrentine. *Munic J* 39:739-40 N 11 '15

German agriculture in war time. *Sci Am* 112:216 Mr 6 '15

Germany's artificial fertilizers. *J Ind & Eng Chem* 7:74 Ja '15

Municipal fertilizer plant at Los Angeles, Calif. B. A. Heinly. *Eng N* 73:1083-4 Je 3 '15

Practical fertilizer for wartime in Germany. *Sci Am S* 79:99 F 13 '15

Radio-active fertilizers. *Sci Am S* 79:53 Ja 23 '15

Radium as a fertilizer. *Sci Am* 112:396 My 1 '15

Report of committee of American chemical society on fertilizer legislation. *J Ind & Eng Chem* 7:445 My '15

War and our chemical industries: agricultural industries. W. H. Bowker. *J Ind & Eng Chem* 7:59-61 Ja '15

World trade in fertilizers. *J Ind & Eng Chem* 7:716 Ag '15

See also Ammonia; Cyanamid; Gypsum; Phosphates

**Fessenden oscillator**

Fessenden oscillator to detect submarines. C. Moffett. *Elec R & W Elec'n* 66:733 Ap 17 '15  
Principles of Prof. Fessenden's oscillator. *Il Sci Am S* 80:168, 170 S 11 '15

**Fibers**

Official method for determining crude fiber as applied to cottonseed meal. C. K. Francis. *Il J Ind & Eng Chem* 7:676-80 Ag '15

Paper-mill to pressroom; future fiber possibilities. W. B. Wheelwright. *Inland Ptr* 54:791-2 Mr '15

See also Textile fibers; Vulcanized fiber

Fibers, Textile. See Textile fibers

**Fibrox**

New heat-insulating material. *Eng N* 73:873-9 My 6 '15

Preparation and properties of fibrox; abstracts. E. W. Weintraub. *Met & Chem Eng* 13:315 My '15; *Eng M* 49:415 Je '15

Field coils. See Electric motors—Testing

**Field museum of natural history, Chicago**

Methods and plant used in constructing the foundations for the Field museum of natural history. *Il plans Eng & Contr* 44:402-5 N 24 '15

Structural features. *diags plan Eng & Contr* 44:226-7 S 22 '15

Field post. See Postal service, Military

**Filene cooperative association**

Industrial betterment. F. E. Cardullo. *Mach* 22:195-7 N '15

**Files and filing (documents)**

Card records of Los Angeles track work. G. E. Campbell. *Elec Ry J* 46:407-8 S 4 '15

Efficient and inexpensive filing system. G. W. Smith. *Concrete Cem* 7:35-6 J1 '15

Filing and indexing of office computations. F. L. Jones. *Eng Rec* 72:128-9 J1 31 '15

Filing engineering clippings. H. A. Burr. *Eng Rec* 72:520 O 23 '15

Highway superintendent of Cook county, Illinois, simplifies filing system. *map Eng Rec* 72:473-4 O 16 '15

Indexing and filing technical literature. A. R. Kenner. *Eng & Min J* 99:851-6 My 15 '15

Indexing car equipment data. H. S. Cooper. *Elec Ry J* 46:1040-1 N 20 '15

Indexing car equipment data. N. Litchfield. *Elec Ry J* 46:877-8 O 2 '15

Labeling and filing plans used by the New York highway commission. *Eng & Contr* 42:324-5 S 30 '14

New system of filing building plans saves time. *Eng Rec* 72:596 N 13 '15

Observations on filing correspondence. C. T. Andrews. *Ry Age* 69:205 J1 30 '15

Railway-valuation office index and file system. H. J. Saunders. *Eng N* 74:894-6 N 4 '15

**Files and rasps**

Progress in machine shop methods. E. R. Norris. *Iron Tr R* 57:749 O 14 '15; Excerpt (Resharpening of files) *Iron Age* 96:1175 N 18 '15

Truing files with add. J. P. Downs. *Mach* 21:954 Ag '15

**Filing machines**

Tilting table bench filing machine. *Il diag Iron Age* 96:1223 N 25 '15

**Filling**

Filling and dredging for a Jersey City freight terminal. *Il diag map Eng N* 72:1216-18 D 17 '14

**Filters and filtration**

Air bound filters. J. M. Caird. *Am Water Works Assn J* 2:103-6 Mr '15

Air-bound filters. R. S. Weston; J. W. Hillms. *Eng Rec* 72:458 O 9 '15

Air-bound filters the chief difficulty in operating Wilmington's water purification plant. E. M. Hoopes, jr. *Il plans Eng Rec* 72:282-4 S 4 '15

Alliance water filters. T. Fleming, jr. *Il plan Eng N* 73:812-14 Ap 29 '15

Another milestone in filtration. *Eng Rec* 71:575 My 8 '15

**Filters and filtration—Continued**

- Baltimore filters abound in useful hints on concrete construction and design. J. W. Armstrong. *11 plans Eng Rec 71:553-6 My 8 '15*
- Baltimore water filtration plant. *11 plan diags Munic J 38:537-41 Ap 22 '15*
- Blackburn-Smith twin filter. *11 Int Marine Eng 20:91 F '15*
- Brass screen between sand and gravel eliminated in Cincinnati filter reconstruction. J. W. Elms. *11 Eng Rec 71:581-2 My 8 '15*
- Court forbids river pollution by filter wash-water. *Eng Rec 72:180-1 Ag 7 '15*
- Depth of filtering material and trickling filter efficiency. H. W. Clark. *Boston Soc C E J 2:57-61 F '15*
- Depth of trickling filters; arguments for and against making them more than seven feet deep. H. F. Eddy, H. W. Clark, and G. W. Fuller. *Munic J 38:345-7 Mr 18 '15*
- Design features and cost of operating water filters of pressure type at New Canaan, Conn. *diags Eng & Contr 42:132-3 Ag 5 '14*
- Design of anti-freezing water filter. W. M. Kinney. *diag Concrete Cem 6:38-9 Ja '15*
- Design of rapid sand water filtration plants. G. W. Fuller. *diags Eng & Contr 42:225-9 S 2 '14*
- Development of rapid sand filters in Ohio. F. Burgess. *Eng & Contr 44:337-9 O 27 '15*
- Economic depth of trickling filters. H. P. Eddy. *Boston Soc C E J 2:49-56 F '15; Discussion. G. W. Fuller; H. F. Eddy. 2:63-78, 191-8 F, My '15*
- Economic size of sand filter beds. C. H. R. Fuller. *Eng & Contr 42:179 Ag 19 '14*
- Economy effected in the use of river sand as a filter medium at Moline, Ill. *Eng & Contr 43:236-7 Mr 17 '15*
- Economy of deep sewage filters explained on basis of "held" water and hydraulics. H. W. Clark. *Eng Rec 72:477-8 O 16 '15*
- Field of the slow sand filter—comparative capacity cost data. R. S. Weston. *Eng & Contr 42:313 S 30 '14*
- Filters balk at operating methods of city fathers. *Eng Rec 71:500 Ap 17 '15*
- Filtration of water: present practice as to the general component parts of rapid filter plants in Illinois. E. Bartow and P. Hansen. *plan Munic J 38:99-101 Ja 28 '15*
- Filtration plant, city of Decatur, Illinois. E. Ruthrauff. *11 Am Water Works Assn J 3: 455-64 Je '15*
- Limitations of water filters. G. W. Fuller. *Munic Eng 47:458-9 D 14 '14*
- Lowell filtration plant for removing iron and manganese from water. W. B. Conant. *11 plan Munic J 39:813-15 O 21 '15*
- Marysville, Kan., filters handle excessively turbid water. C. C. Young. *Eng Rec 72:290-1 S 4 '15*
- New Blackburn-Smith twin feed-water filter. *11 Power 41:270 F 23 '15*
- New filtration plant at Quincy, Illinois. W. R. Gelston. *11 diag Am Water Works Assn J 2:446-52 Je '15; Same. Munic Eng 48:297-8 My '15; Excerpts. Eng N 73:626-7 Ap 1 '15; Excerpts. Eng Rec 71:424 Ap 3 '15; Discussion. Am Water Works Assn J 2:452-4 Je '15*
- New filtration works for Oldham. *11 diag Engineer 120:105-6, 112 Ji 30 '15*
- New mechanical filter. *11 diags Engineer 119: 237-8 Mr 5 '15*
- New sedimentation basin will halve costs of sand cleaning at Philadelphia filters. F. D. West. *diags Eng Rec 71:591-3 My 8 '15*
- Opening of St. Louis filtration plant. *11 Eng N 73:1002 My 20 '15*
- Overhaul Bubbly creek filters, Chicago, after seven years. *Eng Rec 72:377 S 25 '15*
- Philadelphia water-filter operations in 1914. *Eng N 73:576-7 Mr 25 '15*
- Pure water for the army; various forms of field-service filters. *11 Sci Am S 80:89 Ag 7 '15*
- Purifying water by filtration. G. H. White. *Metal Work 84:524 O 22 '15*
- Rapid filter plant at Evanston, Ill. L. Pearse. *11 plans Am Water Works Assn J 2:160-79 Mr '15*
- Reasonable requirements in water filter performance. *Eng & Contr 42:249-50 S 9 '14*
- Reconstruction of the beds of the Cincinnati water-filtration plant. *Eng N 72:1249 D 24 '14*
- Results of task work without bonus in cleaning filter sand at Philadelphia. S. E. Thompson. *Eng Rec 70:608-9 D 5 '14; Same. Eng & Contr 42:579-81 D 23 '14; Same cond., with discussion. Am Soc M E J 37:102-4 F '15; Same cond. (Efficiency study of filter cleaning) Munic J 38:253-4 F 25 '15*
- River sand as a filter medium. L. A. Fritze. *Am Water Works Assn J 2:390-2 Je '15*
- Roughing filtration plant. *plans Engineer 119: 536 My 28 '15*
- St. Louis will operate world's largest mechanical filters next week; views. *Eng Rec 71:578-9 My 8 '15*
- Seven years' successful operation of double sand filtration plant at South Norwalk, Conn., in removal of objectional tastes and odors. H. W. Clark. *Eng & Contr 44:262-3 O 6 '15*
- Small mechanical-filter plant, Franklin Furnace, N. J. R. H. Eurich. *diags plan Eng N 74:776-9 O 21 '15*
- Small slow sand water-filter plant for the estate of J. P. Morgan. J. H. Gregory. *11 diags Eng N 72:1110-11 D 3 '14*
- Smith system of natural slow sand filtration. L. E. Smith. *Eng & Contr 42:247-9 S 9 '14*
- Standard apparatus and procedure recommended for sand analysis. P. Burgess. *Eng Rec 71:644; Discussion. A. Hazen. 71:644-6 My 22 '15*
- Wash water salvage at Champaign and Urbana. H. E. Babbitt. *Am Water Works Assn J 2:393-6 Je '15*
- Water filtration hold-up at Ottawa, Ont. *Eng N 72:1167 D 10 '14*
- Water supply at Wilmington, Delaware. E. M. Hoopes, Jr. and J. M. Caird. *11 Am Water Works Assn J 1:111-34 Mr '14; Same cond. Eng & Contr 42:210-12 Ag 26 '14*
- World's largest rapid sand filter, St. Louis. *11 Sci Am 113:441 N 20 '15*
- See also Air filters; Oil filters; Sewage disposal—Filtration; Water purification; Water supply

**Controllers**

- Automatic control of new filters at Baltimore. J. W. Armstrong. *Eng & Contr 44:369 N 3 '15*
- St. Louis engineers test filter controllers. *diag Eng Rec 72:284-5 S 4 '15*
- Test of filter-rate controllers. E. E. Wall and G. G. Black. *plans Eng N 73:880-1 My 6 '15*

**Patents**

- Minneapolis filter patent—case decision. *Eng N 74:523 S 9 '15*
- Minneapolis loses filter infringement suit. *Eng Rec 72:191 Ag 14 '15*
- Niagara Falls water filter suit. *Munic J 39: 224 Ag 12 '15*

**Testing**

- Strength tests on strainer plates for Baltimore water filters. *diag Eng & Contr 43:108 F 3 '15*
- Water filter of new type, tested at Toronto, employs drifting sand principle; abstracts. G. G. Nasmith and F. Adams. *diag Eng Rec 71:484-5 Ap 10 '15; Engineer 119:355-6 Ap 9 '15; Eng & Contr 43:351-2 Ap 21 '15; Eng N 73:680-1 Ap 8 '15; Eng M 49:438-9 Je '15*
- Filters and filtration (metallurgy)**
- Filtration of slimes. L. D. Mills. *Met & Chem Eng 13:724 O 15 '15*
- New continuous filter. *11 diags Met & Chem Eng 13:125-7 F '15*
- Raising round-filter vacuum. H. G. Thomson. *diags Eng & Min J 100:724 O 30 '15*
- Robacher filter. *11 diag Eng & Min J 99:740-1 Ap 24 '15*
- Filters and filtration (technical chemistry)**
- Efficiency of various methods for the filtration of sugar solutions. A. E. Roberts. *diags J Ind & Eng Chem 6:986-9 D 14 '14*
- Official method for determining crude fiber as applied to cottonseed meal. C. K. Francis. *11 J Ind & Eng Chem 7:676-80 Ag '15*
- Filtros**
- Robacher filter. *11 diag Eng & Min J 99:740-1 Ap 24 '15*

## Finance

## South America

Financial developments in South-American countries. W: H. Lough. U S Bur For & Dom Com 103:1-42 '15

## Financial statements

Financial statements as a basis of credit. J. E. Masters. J Account 19:334-43 My '15  
Standardization of financial statements. F. Oakley. J Account 20:179-85 S '15

## Fine arts. See Art

## Finger prints

See also Identification

Finlay, Charles John, 1833-1915  
Sketch. Sci Am 113:210 S 4 '15

## Fire

Effect of steaming process of creosoting on strength of Oregon fir piling; abstracts. H. B. Macfarland. Eng Rec 70:487-8 O 31 '14; Eng & Contr 42:481-3 N 18 '14; Summary. Eng N 72:868 O 29 '14

See also Douglas fir

## Fire. See Combustion; Fires; Fuel; Heating

## Fire alarms

Alternating-current fire-alarm apparatus. II diag Elec W 66:1107 N 13 '15

Fire alarm attachment for recording pressure gauge. W. E. Haseltine. II diag Am Water Works Assn J 1:551-3 S '14; Same. Eng & Contr 42:453-4 N 11 '14

Fire alarm system for Chicago. II diag Munic Eng 48:229-31 Mr '15

Fire-alarm system of New York city. Elec R & W Elec'n 65:1132 D 12 '14

Interior fire-alarm system. II diag Elec W 65:1005 Ap 17 '15

New fire-alarm system for New York city. Elec R & W Elec'n 67:109 Jl 17 '15

San Francisco's new fire alarm station. J. M. Barry. II Munic J 39:337-40 D 2 '15

Signal box records. P. I. Patton. Munic J 39:337-8 S 9 '15

Thermopile fire detector. II Elec W 65:1478 Je 5 '15

Where electricity saves the seconds. Sci Am 113:15 Jl 3 '15

## Fire apparatus

Amount of apparatus; average number of each kind per hundred thousand population in cities larger than and smaller than fifty thousand. Munic J 39:313-15 Ag 26 '15

Federal fire apparatus. II Munic J 39:328 Ag 26 '15

Fire department statistics; figures received directly from the chiefs of nearly eight hundred fire departments; tabulation. Munic J 39:287-313, 583 Ag 26, O 14 '15

Fire-fighting car at Duluth. II Elec Ry J 45:472-3 Mr 6 '15; Sci Am 112:479 My 22 '15

Horse-drawn fire apparatus; tabulation. Munic J 39:288-94, 581 Ag 26, O 14 '15

Installation and care of fire-protection apparatus. J. O. Benefiel. plan Power 41:19 Ja 5 '15

Portable searchlights for fire departments. L. C. Porter and P. S. Bailey. II Gen Elec R 18:1144-5 D 15

Where the smoke helmet would be invaluable: a lesson from the New York subway fire. II Sci Am 112:66 Ja 16 '15

See also Fire engines; Hose; Hose couplings; Smoke helmets

## Fire apparatus, Motor

Care of rubber tires on fire apparatus. A. H. Leavitt. Munic J 39:473-4 S 23 '15

Cost of auto apparatus at Schenectady, N. Y. G. M. Chase. Munic J 38:314 Mr 11 '15

Cost of fire apparatus in Douglas, Arizona. Munic J 38:470 Ap 8 '15

Electrically propelled fire apparatus. A. J. Marshall. II Elec R & W Elec'n 67:264+ Ag 7 '15

Ford first aid chemical apparatus. II Horseless Age 35:542 Ap 21 '15

Motor fire apparatus. J. A. Anglada. Horseless Age 35:802 Je 16 '15

Motor-propelled fire apparatus; tabulation. Munic J 39:295-301 Ag 26 '15

New developments and recent installations announced since the last annual convention of the International association of fire engineers. II Munic Eng 49:107-13 S '15

Operating conditions of motor fire trucks. A. L. Clough. Horseless Age 35:244 F 17 '15

Packard fire truck with 3-ton chassis, for Farnassus, Pa. II Munic J 39:517 S 30 '15

Recent developments in fire-fighting apparatus—comparative statements of costs of operation. II Munic Eng 49:185-7 N '15

Statistics of motor fire apparatus; tabulation. Munic Eng 49:sup59-74+, sup60+ S-O '15

Storage-battery-drive tractor. G. Boughner. Munic Eng 49:150 O '15

See also Fire engines, Motor

## Fire boats

Motor fire float Delta II. II Int Marine Eng 20:492-3 N '15

Tacoma's fire boat. J. Bashford. II Munic J 39:582 O 14 '15

## Fire brick

British Portland cement making machinery. Engineer 120:81-2 Jl 23 '15

Characteristics of firebrick for boiler furnaces. E. H. Tenney. diags Elec W 66:1086-7 N 13 '15

Deterioration of fireclay goods in ovens and retorts. T. Holgate. Am Gas Light J 103:113-18 Ag 23 '15

Examination of fire-bricks. W. H. Patterson. Met & Chem Eng 13:127-9 F '15

Fire brick. C. S. Reed; J. E. Johnson, jr. Met & Chem Eng 12:740 D '14

Firebrick for boiler furnaces. A. D. Williams. Power 41:297-8 Mr 2 '15; Same cond. Ind Eng 15:107-8 S '15

Firebrick for boiler settings. W: A. Heisel. Power 41:388-7 Je 29 '15

Manufacture and tests of silica brick for the byproduct coke oven. K. Seaver. II Am Inst Min B Bul 105:1913-27 S '15; Same. Met & Chem Eng 13:861-6 N 15 '15; Abstract. Am Soc M E J 37:610 O '15

New type of brick for hot-blast stoves. diags Iron Age 96:312-13 Ag 5 '15

Selecting refractories for the foundry: abstracts. W. H. Kelley. Iron Age 94:942-3 O 22 '14; Ind Eng 14:469-71 D '14

Selling refractory brick by the ton. Eng & Min J 99:196 Ja 23 '15

## Fire departments

Chicago fire department. Munic J 39:840-1 D 2 '15

Cincinnati's fire department. II Munic J 39:283-7 Ag 26 '15

Fire department additions in 1915; tabulation. Munic Eng 48:270-1 Ap '15

Fire department statistics; figures received directly from the chiefs of nearly eight hundred fire departments; tabulation. Munic J 39:287-313 Ag 26 '15

Richmond, Va., fire department. Munic J 38:476 Ap 8 '15

Springfield, Mass., fire drill school. II Munic J 38:470-2 Ap 8 '15

Statistics of fire departments of American cities; tabulation. Munic Eng 49:sup46-57, sup57-8 S-O '15

See also Fire apparatus; Fire extinction; Fire protection

## Fire engineers, International association of. See International association of fire engineers

## Fire engines

Centrifugal pumps for fire engine service; abstract. A. Schacht. Am Soc M E J 37:408-9 Jl '15

## Fire engines, Motor

Efficiency of the chemical engine. I. W. Sibrel. II Munic Eng 49:149-50 O '15

English motor fire engines. II Munic Eng 49:26-8 Jl '15

Gasoline pumping fire engines. E: F. Dahill. Munic J 38:468-70 Ap 8 '15

## Testing

Tests of fire engines. Munic J 39:578-80 O 14 '15

## Fire extinction

Extinguishing fire with kerosene. Sci Am S 80:115 Ag 21 '15

**Fire extinction—Continued**

Fire: extinguishing a blaze by smothering or by cooling. L. V. Redman. *Il Sci Am* 111:494 D 12 '14

Fire-extinguishing materials. Elec R & W Elec'n 67:371 Ag 28 '15

Fire gases for extinguishing fire in coal. G. Harker. *J Ind & Eng Chem* 7:801 S '15

Prevention of fire at sea. W. O. Teague. *Eng M* 49:118-16 Ap '15

Fire hose. See Hose.

**Fire houses**

Automobile fire stations; general plan of one story building for small cities and suburbs. A. S. Augst. *Munic J* 38:656-7 My 13 '15

Fire engine house for a small town. *Il diag plan Bldg Age* 37:37-9 F '15

Holyoke central fire station. *Il Munic J* 38:803-4 Je 10 '15

Trenton's new engine house designed for motor apparatus exclusively. *Il Munic J* 38:656-6 My 13 '15

**Fire inspection**

Fire inspections in Boston; abstract. J. Grady. *Munic J* 37:890 D 17 '14

Fire insurance. See Insurance, Fire

Fire places. See Fireplaces

**Fire pots**

Various constructions of charcoal fire pots. *diag Metal Work* 34:649-51 N 19 '15

Fire prevention. See Fire extinction; Fire protection

**Fire protection**

Blower systems for heating and ventilating and stock and refuse conveying systems: committee report. A. M. Feldman. *diag Am Soc Heat & V B* 20:412-20 '14

Fire-fighting methods at the Mountain View mine, Butte, Mont. C. L. Berrien. *11 pls Am Inst Min E Bul* 102:1215-45 Je '15

Fire prevention measures in the Equitable building. E. R. Hardy. *Il Arch & Bldg* 47:179-83 My '15

Fire prevention progress at Boston. *Eng Rec* 70:629 D 12 '14

Fire protection for the factory. *Il Ind Eng* 15:1-6, 35-9, 61-6, 90-4 Ja-F, Ag-S '15 (to be cont)

Fire protection on the national forests in 1914. H. S. Graves. *Am For* 21:47-50 Ja '15

Handling gasoline. *Munic J* 39:315-16 Ag 26 '15

Hotels and fires. E. R. Hardy. *Arch & Bldg* 47:126-8 Mr '15

Insurance as an aid to engineers. N. H. Daniels. *Boston Soc C E J* 2:31-108 Mr '15

Minnesota highway commission aids in building firebreaks. *Eng Rec* 71:780 Je 19 '15

National fire protection association annual convention. *Eng Rec* 71:667 My 22 '15

Preparedness and fire protection. S. Brockwell. *Munic J* 39:319 Ag 28 '15

Problems in power-plant design. (Engineers' study course) C. L. Hubbard. *Power* 40:831-2; 41:32-4 D 29 '14-Ja 5 '15

Protecting congested districts in cities. R. M. Potts. *Sci Am S* 80:270-1 O 23 '15

Reducing the fire hazard in a factory. H. A. Russell. *Il Iron Age* 90:741-3 S 30 '15

Safeguarding fire hazards in old buildings. Elec R & W Elec'n 67:992-3 N 27 '15

Safety precautions in New York subway; report made to the mayor by the city fire department. *Elec Ry J* 46:601 S 18 '15

Salem (Mass.) conflagration; with discussion. C. H. Smith. *Il W Soc E J* 20:172-92 F '15

Underwriters and fire protection association report on Edison fire. *Il diag plan Eng Rec* 71:239-42 F 20 '15

See also Fire apparatus; Fire departments; Fire escapes; Fire extinction; Fire inspection; Fire service; Fireproof construction; Fireproofing; Forest fires; Inflammable liquids; Railroads—Fire protection

**Laws and regulations**

Garage men protest against 50-foot rule in New York. *Horseless Age* 35:138-40 Ja 27 '15

Regulations governing refrigerators in New York city. *Power* 40:862 D 15 '14

Fire protection association, National. See National fire protection association

**Fire-resisting materials**

Concrete as fire-resisting material. T. A. Edison. *Eng Rec* 71:598 My 8 '15

Fire-resisting qualities of concrete. W. M. Kinney. *Concrete Cem* 8:40 Ja '15

Fire-resisting wood. *Sci Am S* 79:69 Ja 30 '15

Gypsum block in the Edison fire. S. G. Webb; V. G. Marani. *Eng Rec* 71:88 Ja 16 '15

Sheet metal prevents spread of large fire. S. H. Bunnell. *Il Metal Work* 83:110-12 Ja 8 '15

Use of gypsum for fire protection. V. G. Marani. *Eng M* 48:596-8 Ja '15

See also Concrete construction—Fire resistance; Refractory materials

**Fire service**

Cincinnati builds high-pressure fire service system. J. A. Miller. *Il diag Eng Rec* 71:590 My 8 '15

Cincinnati high-pressure fire hydrants. *diag Eng M* 74:153 J1 22 '15

Design details of the Cincinnati high pressure fire system. *diag Eng & Contr* 43:529-32 Je 16 '15

Equitable hydrant rentals and better methods for apportioning fire protection cost. J. W. Alvord. *Am Water Works Assn J* 1:95-102 Mr '14; Same. *Eng & Contr* 41:579-80 My 20 '14; Same. *Munic J* 36:850-2 Je 11 '14; Same cond. *Eng Rec* 69:586-7 My 23 '14; Discussion. *Am Water Works Assn J* 1:538-45, 697-703 S-D '14

Experiences with electrically operated valve installations, under remote control, in New York city. A. Williamson. *Eng & Contr* 44:225 S 23 '15

Fire alarm attachment for recording pressure gauge. W. E. Haseltine. *Il diag Am Water Works Assn J* 1:551-3 S '14; Same. *Eng & Contr* 42:453-4 N 11 '14

Functions of a water system with respect to domestic service and fire protection. E. B. Proctor. *Eng & Contr* 44:136-7 Ag 25 '15

Hydrant tests in Chicago indicate cheaper maintenance possibilities. *Il Eng Rec* 71:483-4 Ap 17 '15

National standard hose couplings and fittings for public fire service. *Il diag U S Bur Stand Circ* 50:1-23 '14; Summary. *Sci Am S* 79:304 My 8 '15

Question box: Should private fire services be shut off, in case of fire in sprinkler protected buildings? *Am Water Works Assn J* 1:652-6 D '14

San Francisco's auxiliary pumping plants. *Power* 42:684-5 N 16 '15

San Francisco's auxiliary water-supply for fire protection. A. J. Cleary. *Il plan diag Eng M* 73:290-7 F 18 '15

San Francisco's auxiliary water supply system for fire protection. M. M. O'Shaughnessy. *Eng & Contr* 44:294-5 O 13 '15

See also Fire apparatus; Hydrants; Standpipes; Water supply

Fire stations. See Fire houses

**Firearms**

Rifling of firearms. A. Keller. *diag Sci Am S* 79:277-8 My 1 '15

See also Artillery; Guns; Pistols; Rifles

**Sights**

Handicapping an army by poor sights. J. H. Parker. *Sci Am S* 80:280 O 30 '15

Telescope sights for fighting rifles. E. C. Crossman. *Il Sci Am* 118:118-19 Ag 7 '15

Fireboxes, Locomotive. See Locomotive fireboxes

Firebreaks. See Fire protection

**Firedamp**

Firedamp detector; abstracts. H. R. Webster. *diag Eng M* 49:108-9 Ap '15; *Colliery* 36:97-8 S '15

See also Mine gases

**Fireflies**

Experiments on the nature of the photogenic substance in the firefly. E. N. Harvey. *diag Am Chem Soc J* 37:396-401 F '15

**Fireplaces**

Efficient smokeless grate for domestic heating. *Il Sci Am* 113:186 Ag 28 '15

Fire-place heater design competition. *Il Am Gas Light J* 103:124 Ag 23 '15

**Fireplaces—Continued**

- Monumental treatment of the fireplace. D: E. Fulton. *Il* *diag*s Brickb 23:297-300 D '14  
Open fireplaces as auxiliary heaters. T. W. Reynolds. *diag* Metal Work 82:741 D 4 '14  
Proportioning fireplaces and flue areas. Metal Work 82:800 D 18 '14  
Vogue of the wood-burning fireplace. S. C. Covert. *Il* *Bldg* Age 37:47-8 N '15

*See also* Mantels

**Fireproof construction**

- Concrete construction and the Edison fire. L. C. Wason. *Textile World* 48:537-40 F '15  
Example of fire-resistant windows and structure: building for the Reliance gauge column co., Cleveland, Ohio. *Il* *Eng* N 72:1331 D 31 '14  
Fire protection for the factory. *Il* *Ind Eng* 15: 1-5, 35-9, 61-6 Ja-F, Ag '15  
Fire-resisting qualities of concrete buildings at the Edison factory, West Orange, N. J. *Il* plan Concrete Cem 6:29-30 Ja '15  
Floor surfaces in fireproof buildings; abstracts. S. E. Thompson. *Ind Eng* 14:461-4 D '14; *Iron Age* 94:1527 D 31 '14; *Am Soc M E J* 37:7-8 Ja '15; *Sci Am S* 79:410-11 Je 26 '15  
Rapid destruction of fireproof buildings: results of the fire in the Edison works at West Orange, N. J. S. H. Bunnell. *Il* *Iron Age* 94: 1331-3 D 17 '14  
Trend of modern home building. *Il* plans *Bldg Age* 37:71-2 D '15  
What is fireproof construction? *Iron Tr R* 56: 526 Mr 11 '15

*See also* Building laws; Concrete construction; Concrete construction—Fire resistance; Fire-resisting materials; Partitions; Steel construction

**Fireproofing**

- Fireproofing mine shafts. *diag*s *Colliery* 35: 441-2 Mr '15  
Fireproofing mine shafts. *Eng & Min J* 99: 421 F 27 '15  
Fireproofing wood for passenger car construction on British railways. *Ry R* 57:689 N 27 '15  
Tests of fireproofed wood. *Eng N* 74:309 Ag 12 '15

*See also* Fireproof construction

**Fires**

- Comments on the Edison fire. *Eng N* 73:38-40 Ja 7 '15  
Concrete pavement damaged by a fire. C. C. Wiley. *Eng N* 73:936-7 My 13 '15  
Disastrous fire at Edison factory. *Il* plan *Eng Rec* 70:660-2 D 18 '14  
Fire damages the Edison plant. *Il* *Elec W* 64: 1132-3 D 12 '14  
Fire in the Edison works at West Orange, N. J. *Il* *Eng N* 72:1233-7 D 17 '14  
Fire-resisting qualities of concrete buildings at the Edison factory, West Orange, N. J. *Il* plan Concrete Cem 6:29-30 Ja '15  
Fire wrecks Roebling insulated wire plant. *Il* *Eng Rec* 71:123-4 Ja 23 '15  
Fires in brick and frame houses; tabulation. *Munic J* 39:217-18 Ag 12 '15  
Fixing legal responsibility for fires. O. B. McGlasson. *Am Ind* 15:31 F '15  
Gasoline fires caused by frictional electricity. *Elec R & W Elec'n* 65:1227 D 26 '14  
Hot chemicals and concrete formed slag at Edison fire. *Eng Rec* 71:134 F 6 '15  
Possibility of fire from locomotive sparks. *Ry Age* 58:267-8 F 12 '15  
Rapid destruction of fireproof buildings: results of the fire in the Edison works at West Orange, N. J. S. H. Bunnell. *Il* *Iron Age* 94:1331-3 D 17 '14

*See also* Bridges—Fires; Fire protection; Fires at sea; Forest fires; Mine fires; Tunnel fires

**Fires at sea**

- Prevention of fire at sea. W. O. Teague. *Eng M* 49:113-16 Ap '15

**Firing**

- Cleaning fires under boilers. *diag*s *Elec W* 65:734-5 Mr 20 '15  
Economical firing from a practical standpoint. R. J. Van Meter. *Ry R* 57:294-6 S 4 '15

Economy in use of fuel results in elimination of dense smoke. F. M. Logan. *Eng Rec* 72: 531-2 N 6 '15

Fuel economy on locomotives; committee report of the A. R. M. M. A. *Il* *Ry R* 57:183-4 Ag 7 '15

German progress in steam boiler firing; abstract. Pradel. *diag*s *Am Soc M E J* 37: 186-7, 235-6 Mr-Apr '15

Hand firing soft coal under power-plant boilers. H: Kreisinger. *diag*s *U S Bur Mines Tech Pa* 80:1-77 '15; Abstract. *Am Gas Light J* 102:139-40 Mr 1 '15; Excerpt (Thickness of fuel bed for hand-fired furnaces). *Elec W* 65:678 Mr 13 '15

Instructing firemen at Philadelphia water pumping stations. *Eng & Contr* 44:359 N 3 '15

Instructions for firing. *Int Marine Eng* 20: 136 Mr '15

Problems of furnace and boiler economy. A. L. Westcott. *diag* chart *Elec W* 66:583-8 S 11 '15

Saving fuel in heating a house. L. P. Breckenridge and S. B. Flags. *U S Bur Mines Tech Pa* 97:1-33 '15; Same (Firing various fuels in residence heaters). *Metal Work* 84:585-6, 613-15 N 5-12 '15

*See also* Stokers, Mechanical

Firing grounds. *See* Rifle ranges

**First aid in illness and injury**

- Berwind-White first-aid meeting. *Il* *Colliery* 35:254-5 D '14  
Chicago elevated first-aid system. H. E. Fisher. *Il* map *Elec Ry J* 46:430-4 S 11 '15  
Contest in rescue and resuscitation work between line crews. *Il* *Elec W* 66:1015 N 6 '15  
Don'ts for first-aid-to-the-injured corps. *Eng & Min J* 99:686-7 Ap 10 '15  
First aid at Ray Consolidated, Ray, Ariz. J. T. More. *Eng & Min J* 100:594-5 O 9 '15  
First-aid belt. *Il* *Elec W* 66:881 O 16 '15  
First-aid instructions for miners. M. W. Glasgow, W. A. Raudenbush, and C. O. Roberts. *Il* *U S Bur Mines Circ* 8:1-64 '15  
First-aid kit. *Eng & Min J* 99:490-1 Mr 13 '15  
First aid treatment. *Metal Ind n s* 13:110-11 Mr '15  
Instructions for first-aid treatment. M. W. Alexander. *Il* *Eng N* 73:284 F 11 '15; Same. *Eng & Min J* 99:366-7 F 20 '15  
N. A. S. O. first aid jar. *Il* *Ry Age* 58:64 Ja 8 '15; *Foundry* 43:73-4 F '15; *Power* 41:185-6 F 9 '15  
N. A. S. O. standard first aid jar. M. W. Alexander. *Il* *Am Ind* 15:24-7 Ja '15; Same. *Ind Eng* 14:466-7; 15:20-1 D 14-Ja '15; Excerpts. *Iron Tr R* 55:1135-64 D 17 '14; Excerpts. *Am Gas Light J* 102:11-12 Ja 4 '15  
Safety in foundry operations. M. W. Alexander. *Il* *Metal Ind n s* 13:284-6 JI '15  
Safety in stone quarrying; common injuries and their treatment. O. Bowles. *U S Bur Mines Tech Pa* 111:38-43 '15

*See also* European war—Medical and sanitary affairs; Mine rescue work; War—Relief of sick and wounded

**Fish waste**

- Composition of certain fish fertilizers from the Pacific coast and the fertilizer value of degreased fish scrap. J: R. Lindemuth. *Il* *J Ind & Eng Chem* 7:615-19 JI '15

**Fisheries**

*See also* Pearl fisheries

**Fishes**

- Effect of water pressure upon the form of fishes. *Il* *Sci Am S* 78:376-8 D 12 '14

European markets for fish. *U S Bur For & Dom Com misc ser* 25:1-36 '15

*See also* Aquariums

**Fitchburg, Mass.****Sewerage**

- Constructing the Fitchburg sewage-works. F. A. Marston. *Il* *diag*s *Eng N* 74:4-6 JI 1 '15  
Sewage disposal works at Fitchburg. D: A. Hartwell. *Il* fold maps *Boston Soc C E J* 2: 203-22 Je '15

**Fitting (machinery)**

- Adjusting tolerances for bolts, nuts, screws and taps. *Iron Age* 95:377 F 11 '15

**Fitting (machinery)—Continued**

- Allowances and tolerances. Mach 21:486 F '15  
 Allowances for gas engine piston fits: abstracts. E. W. Weaver. Mach 21:491 F '15;  
 Horseless Age 35:110-11 Ja 20 '15; Power 41:  
 245 F 18 '15  
 Electric heater for shrink fits. II Elec Ry J  
 45:960-1 N 6 '15  
 Heating hub bolts for shrinking large fly-  
 wheels together. H. B. McDermid. Eng N  
 72:587 Mr 25 '15  
 Method of making a shrink fit. W. Swaren. II  
 Power 40:816 D 8 '14

**Flange facing machine**

- Detrick & Harvey flange facing machine. II  
 Mach 21:680-1 Ap '15

**Flange rollers. See Locomotives—Lubrication****Flanges. See Pipe flanges****Flashlamps. See Electric lamps, Pocket****Flax**

- Flax and hemp supply. C: R. Dodge. Textile  
 World 48:476-8 F '15  
 Netherlands flax crop. C: R. Dodge. Textile  
 World 49:95 Ap '15

**Files**

- Destruction of files and disinfection. Sci Am S  
 80:112 Ag 14 '15  
 Fly exhibition. Sci Am S 80:135 Ag 28 '15  
 Model of musca domestica 64,000 times life  
 size. J. W. Grigg. II Sci Am 113:457 My 15  
 '15  
 Swat the fly eggs. II Sci Am 112:613 Je 19 '15

**Flint, Michigan**

- Flint—second city of automobile industry.  
 L. V. Spencer. II Automobile 32:569-75 Ap  
 1 '15

**Flong machine**

- Rivett flong machine. A. W. Birdsall. II In-  
 land Ptr 56:95-6 Ap '15

**Flood control**

- East side levee and sanitary district. T. N.  
 Jacob. II diags map Assn Eng Soc J 55:1-11  
 J1 '15  
 Engineering lessons from the Ohio floods. J: W.  
 Alvord. II Boston Soc C E J 1:85-108; Dis-  
 cussion. 1:109-17 Mr '14  
 Erie can remove flood menace by spending  
 \$798,000 on Mill creek improvement. F. Gan-  
 nett. II diags map Eng Rec 72:440-2 O 9 '15  
 Erie flood-protection report. diags Eng N 74:  
 837 N 11 '15  
 Flood prevention plans for Dayton, Ohio. W:  
 S. Crandall. map Munic Eng 49:103-4 S '15  
 Flood prevention undertakings in Ohio; pro-  
 ceedings under new conservancy law. Eng  
 & Contr 43:sup21 Je 9 '15  
 Flood protection in China; report of the board  
 of engineers. Eng N 72:1231 D 17 '14  
 Flood-protection work on Fall creek at Indian-  
 apolis, Ind. L. F. Wertz. II diags map Eng N  
 72:1120-3 D 3 '14  
 Flood relief in the Hual river district of  
 China. map Engineer 120:331 O 8 '15  
 High levees will protect Indianapolis from  
 floods. II map Eng Rec 72:560-2 N 6 '15  
 Indianapolis flood protection. II map Eng N  
 74:961-5 N 18 '15  
 Indiana's flood problems. W. K. Hatt. Eng Rec  
 71:169 F 6 '15  
 Miami conservancy district established. map  
 Eng & Contr 44:sup29 J1 '15  
 Progress on the Miami valley flood-prevention  
 work. map Eng N 74:92 J1 8 '15  
 Proposed method of enclosing a stream in re-  
 inforced concrete conduit through Mansfield,  
 Ohio. C. L. Bushey. diag Eng & Contr 43:  
 126-7 F 10 '15  
 Report on flood prevention in China. II Eng  
 Rec 70:679-80 D 19 '14  
 Securing popular support for a great project.  
 S. E. Ankeney. II Eng Rec 70:646-8 D 12 '14  
 \$16,000,000 required for Los Angeles county  
 flood protection. II diags map Eng Rec 72:  
 204-6, 232-8 Ag 14-21 '15  
 Why rivers overflow: how floods may be pre-  
 vented. A. E. Morgan. II diags Sci Am S 78:  
 392-4 D 19 '14  
 See also Snow surveys

**Floodgates**

- Dayey's models of automatic sluices and flood  
 gates. II diags Engineer 119:410-11 Ap 23 '15

**Floodlighting. See Light projection****Floods**

- April floods in Texas. B. Bunnemeyer. Eng N  
 74:152 J1 22 '15  
 Concrete work withstands severe tests in Erie  
 flood. L: R. Ferguson. II Concrete Cem 7:  
 148-50 O '15  
 Destruction wrought by Erie flood. II Elec W  
 66:489-92 Ag 28 '15  
 Effect of recent floods on railways. II Ry Age  
 59:729-32 O 22 '15  
 Erie rainstorm and flood. II map Eng N 74:  
 328-9 Ag 12 '15  
 Flood damage to railroads in Middle west. II  
 Ry Age 59:393-4 Ag 27 '15  
 Power plant and the Ohio flood. F. C. Cald-  
 well. Sibley J 29:175-8 Mr '15  
 Restricted stream channel responsible for Erie  
 flood damage. T. E. Seelye. II Eng Rec 72:  
 186-9 Ag 14 '15  
 See also Flood control

**Floors**

- Decorative value of tile flooring. Bldg Age 37:  
 88-4 My '15  
 Floor surfaces in fireproof buildings; abstracts.  
 S. B. Thompson. Ind Eng 14:451-4 D '14;  
 Iron Age 94:1527 D 31 '14; Am Soc M E J 37:  
 7-8 Ja '15; Sci Am S 79:410-11 Je 26 '15  
 Hazards of factory floors. II Am Ind 15:sup1-4  
 My '15  
 Tie-rods for floor arches; a criticism of cur-  
 rent practice. F. N. Kneas. diags Eng N  
 73:618-19 Mr 18 '15  
 Tie-rods in tile-arch floors. G. Aus. Eng N  
 73:743 Ap 15 '15  
 Use of wood blocks for floors. II Iron Tr R  
 56:521-2 Mr 11 '15  
 See also Bridges—Floors; Building; Pavements

**Cost**

- Cost of a damp-proof timber floor. J. A.  
 Holmes. Eng N 72:432-3 Ag 27 '14; Same.  
 Ind Eng 14:372-3 S '14; Same. Bldg Age 37:  
 48 Ap '15  
 Cost of floors for buildings. S. E. Thompson.  
 Eng Rec 70:652 D 12 '14

**Testing**

- Hollow-tile partitions and floor arches tested.  
 diags Eng Rec 71:432 Ap 3 '15  
 Using water as load in a floor test. F. R. Mc-  
 Millan. II Eng N 72:1168-9 D 10 '14

**See also Floors, Concrete—Testing****Floors, Concrete**

- Chicago engineer experiments with the dusting  
 of concrete floors. Eng Rec 71:155 Ja 30 '15  
 Cinder concrete floors. G. B. Waite. diags Eng  
 & Contr 41:600-3 My 27 '14; Same cond. Ind  
 Eng 14:302-4 J1 '14; Discussion. Eng & Contr  
 42:512-15 D 2 '14  
 Concrete dance floors. H. Laughlin, jr. Con-  
 crete Cem 7:34-5 J1 '15  
 Concrete floor hardening system. Eng N 73:  
 221 F 4 '15  
 Concrete floor troubles. M. D. Campbell. Ry  
 Age 59:965-6 N 19 '15  
 Concrete floors for stables. L. C. Wason. Con-  
 crete Cem 6:42-3 Ja '15  
 Concrete floors in dwelling houses. H. Laugh-  
 lin, jr. Concrete Cem 6:41 Ja '15  
 Design and construction of Massachusetts in-  
 stitute of technology buildings. S. E. Thomp-  
 son. II diags plan Concrete Cem 7:14-19 J1  
 '15; Same. Eng & Contr 43:513-18 Je 9 '15;  
 Same cond. Eng Rec 71:748-50 Je 12 '15  
 Dustless concrete floors. II Eng Rec 70:607 D  
 5 '14  
 Economic design of concrete slabs. J. N. Jen-  
 sen. Eng Rec 71:170-1 F 6 '15  
 Experiments to determine the cause of dust-  
 ing of concrete floors. Eng N 73:228-9 F 4  
 '15  
 Flat slab floor of unique design at Cleveland  
 railway company car shops. II diags Con-  
 crete Cem 7:84-5 Ag '15  
 Flat-slab reinforced-concrete floor at shops of  
 the Cleveland railway co. II diag Eng N 73:  
 1214-15 D 17 '14  
 Floor construction for driveway in cannery  
 factory. Concrete Cem 7:114-15 S '15  
 Linseed oil cures dusty concrete floors. Eng  
 Rec 71:294 Mr 6 '15



**Floors, Concrete—Continued**

- New and simple method for securing dustless concrete floors; with discussion. P. M. Bruner. *Concrete Cem* 6:118-19 Mr '15; Same. *Assn Eng Soc J* 54:142-9 Ap '15
- New method for concrete flooring. *Sci Am* 112: 191 F 27 '15
- New system of adjustable concrete floor forms. *II diag Concrete Cem* 6:269-70 My '15
- New tile and concrete floor. *diag Eng N* 73: 1183 Je 17 '15
- Prevention of dusting of concrete floors. J. P. H. Perry. *Concrete Cem* 7:183 N '15
- Reinforcing details of Delco building, Dayton, Ohio. *diag Eng N* 74:974-5 N 18 '15
- Remedy for dusting concrete floors. *Elec Ry J* 46:20 JI 3 '15
- Renewing a basement floor. L. C. Wason; A. M. Smith. *Concrete Cem* 6:240 Ja '15
- Strength and other properties of typical cinder concrete used in floor construction in New York. H. Perrine and G. E. Strehan. *Eng & Contr* 43:301 Mr 31 '15
- Suggestions for light concrete floor construction in the concrete house. M. D. Morrill. *diag Concrete Cem* 6:35 Ja '15

**Testing**

- Results of tests of cinder concrete floor slabs, with conclusions and recommended methods of design. H. Perrine and G. E. Strehan. *Eng & Contr* 43:379-83 Ap 28 '15
- Severe tests show Chicago municipal pier to be sound in construction. *II Eng Rec* 72:75 JI 17 '15
- Test of load-distributing action of floor arches. F. N. Kneas. *diag Eng N* 73:1025 My 27 '15
- Testing cinder concrete floors. H. Perrine. *Concrete Cem* 6:25 Ja '15

**Floors, Metal plate**

- Metal plate floor shop. J. J. Turteltaub. *II Iron Age* 95:239 Ja 28 '15

**Floriculture**

See also Electrohorticulture; Plant breeding

**Florida**

See also Roads—Florida

**Industries and resources**

- Phosphate rock industry of Florida. L. W. Tucker. *II Boston Soc C E J* 1:509-22 D '14
- Florida East Coast railway
- To Cuba by rail. H. C. Plummer. *II map Sci Am S* 79:40-1 Ja 16 '15

**Flotation process**

- Bradford selective flotation. *Eng & Min J* 100: 562 O 2 '15
- Callow pneumatic process of flotation. *II plan Met & Chem Eng* 13:571-2 S 1 '15
- Concentrator of the Timber Butte milling co., Butte, Mont. T. Simons. *Am Inst Min E Bul* 102:1305-6 Je '15; Abstracts. *Met & Chem Eng* 13:448-9 JI '15; *Eng & Min J* 99:991 Je 5 '15
- Development of ore concentration. H. A. Marvin. *Eng M* 49:229-30 My '15
- Flotation as a conservation measure. *Met & Chem Eng* 13:344-5 Je '15
- Flotation at the Consolidated Arizona smelting co., Humboldt, Arizona. flow sheet *Met & Chem Eng* 13:897-901 D 1 '15
- Flotation in gold metallurgy. W. B. Blyth. *Met & Chem Eng* 13:308 My '15
- Flotation of Joplin-Galena slimes. G. Belchic and G. L. Allen. *Met & Chem Eng* 13:847 N 15 '15
- Flotation process. *Eng & Min J* 99:99-100 Ja 9 '15
- Flotation suit. *Met & Chem Eng* 13:409-11 JI '15
- Flotation testing machine. *II Met & Chem Eng* 13:930 D 1 '15
- Flotation testing machine. R. W. Smith. *diag Eng & Min J* 100:395-6 S 4 '15
- Flotation tests on ores from Bisbee and Cobalt. H. J. French. *biblog Sch Mines Q* 36:57-67 N '14; Abstract. *Met & Chem Eng* 13:509 Ag '15
- Individual motor drive as used in the oil flotation process. W. M. Hoen. *Am Inst E Bul* Pro 34:3011-18 D '15

- Liquid jets. C. T. Du Rell. *Met & Chem Eng* 13:714-16 O 15 '15
- New copper metallurgy. H. A. Megraw. *II Eng M* 48:677-9 F '15
- New flotation experiment. *Eng & Min J* 100: 900 N 27 '15
- New flotation installations. *Eng & Min J* 100: 668 O 23 '15
- Notes on flotation. J. M. Callow. *diag flow sheets Am Inst Min E Bul* 108:2321-39 D '15
- Recent progress in flotation. O. C. Ralston and F. Cameron. *Eng & Min J* 99:937-40 My 29 '15; Discussion. 99:1084; 100:68 Je 19, JI 10 '15
- Testing oils for flotation process; abstracts. J. Coutts. *Met & Chem Eng* 13:389-90 Je '15; *Eng & Min J* 99:1079-80 Je '15
- Two historical notes on flotation. W. F. Copeland, D. Butler and J. H. Wise. *Met & Chem Eng* 13:471-2 Ag '15; Same. *Sci Am S* 80: 182 S 18 '15
- Unsettled patent litigation. *Eng & Min J* 99: 263 Ja 30 '15
- Use of coal tar in flotation. W. A. Mueller. *Eng & Min J* 100:591-3 O 9 '15

**Flour**

- Contributions of the chemist to the flour industry. J. A. Wesener and G. L. Teller. *J Ind & Eng Chem* 7:233-5 Ap '15
- New whole wheat flour. C. Maxaner. *Sci Am* 112:67 Ja 16 '15
- See also Banana flour; Corn meal

**Flour mills**

- Apparatus for cleaning, separating and delivering grain. *II diag Engineer* 119:338 Ap 2 '15
- Application of electric drive in flour mills and similar industries; abstract. T. E. Simpser. *Elec R & W Elec'n* 66:192-3 Ja 30 '15
- Detroit flour-mill plant. T. Wilson. *II plan Power* 40:370-3 D 22 '14
- Electric motor drive; method of interlocking machines for simultaneous operation in the new plant of the Commercial milling company, Detroit, Mich. *II diag plan Elec W* 65:105-9 Ja 9 '15
- Motor sizes for flour-mill machinery. *Elec W* 65:418-19 F 13 '15; Same cond. *Ind Eng* 15: 83-4 Ag '15

**Flue dust**

- Case for copper hydrometallurgy; inexpensive and efficient treatment of smelter flue dust carbonate ore. G. C. Westby. *II Met & Chem Eng* 13:295-7 My '15
- Flue dust sintering plant at Gary, Ind. *II plan Iron Age* 95:1168-70 My 27 '15
- Mechanical progress of sintering. B. G. Klugh. *diag Iron Tr R* 57:835-8+ O 28 '15; Same. *Iron Age* 96:1000-4 O 28 '15; Discussion. H. A. Brassert. *Iron Tr R* 57:845 O 28 '15; Discussion. R. E. Brooke; H. A. Brassert. *Iron Age* 96:1004-5+ O 28 '15
- Metallurgical smoke. C. H. Fulton. *U S Bur Mines Bul* 84:27-32, 38-44 '15
- Recovery of flue-dust iron. R. Baggaley. *Iron Age* 95:1109 My 20 '15
- Utilizes flue dust by mixing with iron. *diag Iron Tr R* 57:368 Ag 19 '15
- See also Blast furnace gas; Blast furnaces; Briquets (iron); Sintering; Smelting

**Flue gas**

- Calculating dry flue-gas loss. C. W. Hubbard. *Power* 42:746-8 N 30 '15
- Cinder removal from flue gases. C. B. Grady. *diag Eng M* 48:905-7 Mr '15
- Flue-gas collector. C. H. Bean. *diag Power* 42:763 N 30 '15
- Flue-gas collector. F. W. Fischer. *diag Power* 42:489-90 O 5 '15
- Flue-gas sample collector. J. Morlock. *II Power* 42:727-8 N 23 '15
- How much CO<sub>2</sub> to expect with various kinds of fuel. V. J. Azbe. *Power* 42:712-14 N 23 '15
- Measurement of flue-gas temperature. F. T. Lellich. *Elec W* 65:901 Ap 10 '15
- See also Blast furnace gas

**Fluids**

- Automatic volumeter; abstract. E. G. Hopson. *diag Am Soc M E J* 37:722-3 D '15

**Fluids—Continued**

Flow of viscous fluids through smooth circular pipes. C: H. Lees. *Am Soc M E J* 37:242 Ap '15

See also Gas flow; Gases; Hydraulics; Hydrodynamics; Liquids; Osmosis; Solution (chemistry); Steam flow; Viscosity

**Fumes**

Construction of timber logging fumes. *diag Eng & Contr* 42:183-4 Ag '14

Flume without side braces. B. A. Heinly. *II diag Eng N* 74:173 JI 22 '15; Same. *Eng & Min J* 100:354-5 Ag 28 '15

Handling hydraulic fill on Plute dam. J. Jensen. *II diag Eng Rec* 72:80-1 JI 17 '15

Hydrostatic catenary fume on a concrete aqueduct. H. B. Muckleston. *II diag map Eng N* 74:58-63 JI 8 '15

Irrigation fumes of ingot iron. *II Eng N* 72:1314-15 D 31 '14

Large, long reinforced-concrete flume of catenary section. *Eng N* 72:1267-8 D 24 '14

New rating flume for current meters. Bureau of standards. *II Eng N* 73:1127 Je 10 '15

Proposed government testing flume for hydraulic turbines not needed. H. B. Taylor. *Eng Rec* 72:321-2 S 11 '15

Recommendations for values of  $n$  for different kinds of irrigation channels. F. C. Scobey. *Eng & Contr* 44:57-60 JI 21 '15

Timber flume for water power in British Columbia. C: A. Lee. *diag Eng & Contr* 44:398 N 17 '15

See also Hydroelectric plants; Irrigation canals

**Fluorescence**

Fluorescence of petroleum distillates. B: T. Brooks and R. F. Bacon. *Sci Am S* 79:61 Ja 23 '15

**Fluorine**

Quantitative determination of fluorine. W: H. Adolph. *diag Am Chem Soc J* 37:2500-15 N '15

Syntheses in the diphenylmethane series. L. Thorp and E. A. Wildman. *Am Chem Soc J* 37:372-7 F '15

**Fluorspar**

Action of fluorspar on basic open-hearth slags. W. S. Hamilton. *Met & Chem Eng* 13:3 Ja '15

**Fluting**

Automatic machine for fluting drills. *II Iron Age* 95:720 Ap 1 '15; *Iron Tr R* 56:680 Ap 1 '15; *Mach* 21:683 Ap '15

**Flux**

Fluxes for oxy-acetylene welding. P. F. Willis; S. W. Miller. *II Mach* 21:1007-8 Ag '15

Fluxes for oxy-acetylene welding. S. W. Miller. *II Mach* 21:785-9 Je '15

Phosphate rock as furnace flux. J. A. Barr. *II Iron Tr R* 56:183-5 Ja 21 '15

**Fly traps**

Suction fly catcher. F. C. Perkins. *II Sci Am* 113:236 S 11 '15

**Flying boats**

Experiments with flying boat hulls. C. H. Butman. *II Sci Am S* 79:148 Mr 6 '15

Flying-boat hulls. W: H. Fauber. *Sci Am S* 79:407 Je 26 '15

**Flying machines**

Bronze in history-making: an ancient figured bronze door reveals the aerial-navigation engineering of antiquity. L. Lodian. *II Metal Ind n s* 13:51-3 F '15

See also Aeroplanes

**Flywheel explosions**

Fly-wheel explosions, 1914. *Locomotive* 30:152-3 Ja '15

Two flywheels explode at Illinois steel co.'s plant. *Power* 41:491-2 Ap 6 '15

Unusual fly-wheel explosion at Nelsonville, O. *II Locomotive* 30:172-5 Ap '15

**Flywheels**

Handy flywheel calculator. *II Power* 42:683 N 16 '15

Huge flywheel for Ford plant. *II Automobile* 32:505 Mr 18 '15

Large wooden flywheel. *II diag Power* 41:439-40 Mr 30 '15

Machining flywheels. *II diag Mach* 21:813-15 Je '15

Fodder. See Feeding and feeding stuffs

**Fog signals**

Fog and fog signals. E. O. Catford. *Engineer* 119:129-30 F 5 '15

Fog signals through air and through water. R. F. Blake. *Sci Am* 111:507 D 19 '14

Providing a ship with ears; a system for locating other ships and icebergs during fog. *II R. G. Skerrett. Sci Am* 113:450 N 20 '15

Submarine signalling. *Engineer* 119:446 My 7 '15; Same. *Sci Am S* 80:168-70 S 11 '15

Submarine signalling and proposed method of safe navigation in fog: abstract. F. L. Sawyer. *Int Marine Eng* 20:21-2 Ja '15

**Folding machines**

Accordion fold with the zig-zag folding machine. *II Inland Ptr* 56:120 O '15

Folk-lore, Medical. See Medical folk-lore

Follow-up system for the foundry. T. A. St. Clair, jr. *Foundry* 43:819-21 Ag '15

**Food**

Dried beer-yeast as an article of food. *Sci Am S* 79:311 My 15 '15

Food for polar explorers. E. Shackleton. *Sci Am S* 79:36-7 Ja 16 '15

Transforming sugar into proteins and fats. H. W. Hillyer. *Sci Am* 113:446+ N 20 '15

See also Bakers and bakeries; Bread; Butter. Substitutes for; Eggs; Flour; Food adulteration; Glucose; Mastication; Meat; Milk; Nutrition; Proteins; Syrups; Wood as food

**Analysis**

Concise group method for the detection of gelatinizing agents, pasty material and thickeners, used in food products. L. A. Congdon. *J Ind & Eng Chem* 7:606-7 JI '15

Examination of tomato pulp. W. D. Bigelow and F. F. Fitzgerald. *J Ind & Eng Chem* 7:602-6 JI '15

See also Soy beans

**Food laws**

Pure food law. L: Hogrefe. *J Ind & Eng Chem* 7:1001-2 N '15

**Food preservatives**

Air ozonation. M. W. Franklin. *J Ind & Eng Chem* 6:853-4 O '14; Same. *Am Soc Heat & V E* 20:350-4 '14

**Food supply**

Food production in the United States. *Sci Am* 112:326 Ap 3 '15

**Food waste**

Feeding the German nation in time of war. *Sci Am* 112:126 F 6 '15

**Foot-and-mouth disease**

Battle with foot-and-mouth disease. *Sci Am* 113:193 F 27 '15

**Footbridges**

Cost of railway footbridges. *diag Engineer* 120:197-9, 221-3, 240-2, 266-8 Ag 27-S 17 '15

Footings, Column. See Column footings

**Forage plants**

Chemical study of two drought-resisting forage plants. S. Lomanitz. *J Ind & Eng Chem* 7:220 Mr '15

**Force and energy**

Conversion of energy. (Engineers' study course) *Power* 41:103 Ja 19 '15

Energy contained in revolving wheels and locomotive side rods. W. E. Symons. *Ry Age* 59:455 S 10 '15

See also Dynamics; Electromotive force; Free energy; Mechanics; Pressure

**Ford motor company**

Details of the reinforced concrete building of the Ford motor co., Chicago, Ill. *II diag Eng & Contr* 42:220-2 S 2 '14

Ford averages 1927 cars a day. *Automobile* 33:249-50 Ag 19 '15

Ford methods and the Ford shops. H. L. Arnold; F. L. Faurete. *II Eng M* 47:1-26, 179-203, 331-58, 507-32, 567-92, 587-86; 43:33-60, 187-212, 338-56, 524-50, 704-21, 359-76; 49:67-87, 184-201, 372-93 Ap 14-Je '15

Ford sociological work; results of second year of profit-sharing. *Iron Age* 96:443 Ag 19 '15

**Ford motor company—Continued**

- Foundry economies in the Ford motor plant. *Il* diag Iron Age 96:680-3 S 23 '15  
 Heating and ventilating system that conserves the comfort of 15,000 workers at the Ford plant in Detroit. *Il* Sci Am S 80:280 O 30 '15  
 Making of men, motor cars and profits. O. J. Abell. *Il* Iron Age 95:33-41+ Ja 7 '15  
 Shipping 2000 cars a day. M. Braun. *Il* plan Automobile 33:646-9 O 7 '15

**Foreign bodies (surgery)**

- Determining the depth of a foreign substance in the body. Sci Am S 80:355 D 4 '15  
 Electro-magnet for removing particles of iron from the flesh. *Il* Mach 21:601 Mr '15;  
 Elec R & V Elec'n 66:508 Mr 13 '15; Iron Age 95:462 F 25 '15; Iron Tr R 66:525 Mr 11 '15; Sci Am S 79:168 Mr 13 '15

**Foreign trade. See Export trade****Foreign trade convention, National. See National foreign trade convention, 2d****Foremen**

- Difficulties in increasing the scope of the section foreman's duties. J. P. Costello. Ry Age 58:1449-50 Je 18 '15  
 Points for the road foreman. W. P. Danforth. Ry Age 57:1130-1 D 18 '14  
 Training engine house foreman. R. G. Gilbride. Ry Age (Mech ed) 89:31 F '15  
 Value of a foreman in a brass manufacturing plant. P. W. Blair. Metal Ind n s 12:504 D '14  
*See also* Mine foremen

**Forest administration**

- Crisis in New York. H. H. Chapman. Am For 21:168-71 Mr '15  
 National forest administration. D: F. Houston. Am For 20:867-9 D '14  
 Situation in Michigan. H. H. Chapman. Am For 21:1066-8 N '15  
*See also* Forest finance; Forest reserves

**Forest conservation**

- Destroying Mt. Mitchell. R. Pullman. *Il* Am For 21:83-93 F '15  
 Forests and game preservation. O. H. Van Norden. *Il* Am For 21:111-16 F '15  
 New York constitution. Am For 21:941-2 S '15  
 Philippine forest wealth. D. C. Worcester. *Il* Am For 21:1-13 Ja '15  
*See also* Forest reserves

**Forest finance**

- Bonding national forests. H: S. Graves. Am For 21:69-63 Ja '15  
 New factor in forest finance. W. T. Christine. Am For 21:1001-2 O '15  
 States get \$850,000 from national forests. Am For 21:990-1 O '15

**Forest fires**

- Coal company practices forestry. A. C. Neumiller. *Il* Am For 21:868-71 Ag '15  
 Dark days and forest fires. C. F. Talman. map Sci Am 112:229 Mr 6 '15  
 Fire protection on the national forests in 1914. H: S. Graves. Am For 21:47-50 Ja '15  
 National forest fires in 1914. Am Ind 15:34-5 Ja '15  
 Swedish forest fire insurance. Am For 21:531 Ap '15  
 Tackling Tamalpais. F: E. Olmsted. *Il* Am For 20:837-93 D '14  
 Three miles of flame: a cross-country ride and three days of work with a fire warden in New England. A. Chamberlain. Am For 21:64-7 Ja '15

**Forest management**

- Northern hardwood forest; its composition, growth, and management. E. H. Frothingham. *Il* U S Agric Bul 285:33-44 '15  
 Southern cypress. W. R. Mattoon. *Il* map U S Agric Bul 272:50-70 '15

**Forest planting**

- Methods employed in the reforestation of the Croton watersheds. T. C. Culyer. Eng & Contr 44:202 S 15 '15  
 Reforestation movement in China. W. F. Sherfese. *Il* Am For 21:1033-40 N '15  
*See also* Tree planting

**Forest products**

- Work and some accomplishments of the forest products laboratory, Madison, Wis.; with

discussion. H. F. Weiss. *Il* diag W Soc E J 19:933-64 D '14

*See also* Gums and resins; Lumber; Wood

**Forest products federation**

- Tentative organization. E. A. Sterling. Am For 21:55-6 Ja '15

**Forest reserves**

- Bonding national forests. H: S. Graves. Am For 21:59-63 Ja '15  
 Forestry in Wisconsin. E. M. Griffith. Am For 21:559-62 Ap '15  
 Forests of the United States. L. Lundgren. *Il* map Eng M 50:1-17 O '15  
 40,000 get free timber. Am For 21:991 O '15  
 Hunting on the national forests. H. A. Smith. *Il* Am For 21:172-82 Mr '15  
 Improved White mountain forests. W: L. Hall. *Il* Am For 21:117-26 F '15  
 National forest administration. D: F. Houston. Am For 20:867-9 D '14  
 New England's federal forest reserve. P. W. Ayres. *Il* maps Am For 21:803-12 JI '15  
 States get \$850,000 from national forests. Am For 21:990-1 O '15  
 United States mining statutes annotated; forest reservation act. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1166-77 '15  
 Weeks law conference. Am For 21:1004-5 O '15  
*See also* Forests and forestry

**Forest service (United States)**

- Clerk's work on a national forest. J. T. Shinn. *Il* Am For 21:653-6 My '15  
 Forest service and the prospector. L. A. Palmer. Colliery 35:511+ Ap '15  
 National forestry in Montana. F. R. Ingalsbe. Assn Eng Soc J 54:175-98 My '15

**Foresters**

- Foresters in the German army. T. R. Helms. *Il* Am For 21:527-31 Ap '15  
 Foresters in the great war. S: T. Dana. *Il* Am For 20:858-67 D '14

**Forestry. See Forests and forestry****Forestry association, American. See American forestry association****Forestry clubs**

- Township forestry club. G: B. Cobb. Am For 21:109 F '15

**Forestry laws and legislation**

- Federal and state forestry legislation. Am For 21:145-7 F '15  
 Texas forestry law. Am For 21:615-16 My '15  
 United States mining statutes annotated; timber cutting for mining purposes. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1334-53 '15  
 Weeks law conference. Am For 21:1004-5 O '15  
 Wisconsin's forestry tangle. Am For 21:206-7 Mr '15

*See also* Forest reserves

**Forestry schools and education**

- Oregon forest students. *Il* Am For 21:740-2 Je '15  
 Yale forestry class in the woods. J. L. Goodwin. *Il* Am For 21:872-5 Ag '15  
*See also* Colorado school of forestry

**Forests, Municipal**

- First town forest. Am For 21:1042 N '15  
 Harrisburg's municipal forest. H. J. Mueller. *Il* Am For 21:732-5 Je '15

**Forests and forestry**

- See also* Forest conservation; Forest fires; Forest reserves; Foresters; Forests, Municipal; Landscape gardening; Pine; Tree planting; Trees; Wood; Woodlots

**Belgium**

- Forests of Belgium. C: H. Whitaker. *Il* Am For 21:22-32 Ja '15

**Canada**

- Canadian lumber competition. H. D. Langille. *Il* Am For 21:130-9 F '15

**China**

- Reforestation movement in China. W. F. Sherfese. *Il* Am For 21:1033-40 N '15

## Forests and forestry—Continued

## France

Great war's destruction of French forests. J. P. Alaux. *Il Am For* 21:155-68 Mr '15

## Germany

American trees in German forests. J. S. Illick. *Il Am For* 21:922-7 S '15

Great war and German forests. P. Bigelow. *Il Am For* 21:607-12 My '15

## India

British India. U S Sp Cons Rep 72:399-408 '15

## Japan

Forests of Japan. N. B. Eckbo. *Il Am For* 21:693-711 Je '15

## Michigan

Situation in Michigan. H. H. Chapman. *Am For* 21:1066-8 N '15

## Montana

National forestry in Montana. F. R. Ingalsbe. *Assn Eng Soc J* 54:175-98 My '15

## North America

Northern hardwood forest; its composition, growth, and management. E. H. Frothingham. *Il map U S Agric Bul* 285:1-79 '15

## Philippine Islands

Philippine forest wealth. D. C. Worcester. *Il Am For* 21:1-18 Ja '15

Philippine forestry exhibit. A. T. Fischer. *Il Am For* 21:997-9 O '15

## Russia

Forests in the Russian war zone. E. Washburn. *Il Am For* 21:765-67 Jl '15

## Switzerland

How Switzerland cultivates her forests. M. Wildmer. *Il Am For* 21:847-50 Ag '15

## United States

Forestry issue in the lake states. H. H. Chapman. *Am For* 21:666-9 My '15

Forests of the United States. L. Lundgren. *Il map Eng M* 50:1-17 O '15

See also Forest reserves; Forestry service (United States)

## Wisconsin

Forestry in Wisconsin. E. M. Griffith. *Am For* 21:559-62 Ap '15

Forge furnaces. See Furnaces, Metallurgical

## Forge shops

Description of nut, bolt and rivet shop of Upson nut co., Cleveland, with details of arrangement and equipment. R. V. Sawhill. *Il plan Iron Tr* 11:56:1345-54+ Jo 17 '15

Modern automobile forge shop; Packard motor car co., Detroit. F. A. Churchill, Jr. *Il plans Iron Tr R* 57:829-32+ O 28 '15

New forge shop of Upson nut company, Cleveland. *Il plans Iron Age* 96:1336-43 Jo 17 '15

Utilizing waste heat in a drop forge shop: hot gases from furnaces used to generate steam. *Il diag plan Iron Age* 95:45-7 Ja 7 '15

See also Forging; Forging machinery

## Forgery

Science and the forger; instruments and illustrations in questioned document cases. A. S. Osborn. *Il Sci Am* 112:434-5 My 8 '15

## Forging

Don'ts for drop-forge die hardeners and users. W. L. Goodrich. *Mach* 21:453 F '15

Drop forging. A. M. Tilton. *Iron Age* 95:1177-8 My 27 '15

Efficiency of forging hammers. C. H. Wackernagel. *Mach* 21:785 Je '15

Equipment for forging shrapnel cases. C. A. Tupper. *Iron Age* 96:512-14 S 2 '15

Forging shrapnel shells. D. T. Hamilton. *Il diag Mach* 21:614-18 Ap '15; Same. *Sci Am* S 79:404-6 Je 26 '15

Forging the shrapnel head. *Il diag Mach* 21:637-8 Ap '15

Master blacksmiths' convention; discussion of drop forging. *Il Ry Age (Mech ed)* 89:476 S '15

Rolling tapered forgings. F. H. Blakeslee. *Il Mach* 21:909-10 Jl '15

Why do you wet coal on the forge? L. K. Hirschberg. *Colliery* 85:414 Mr '15

See also Dies; Forge shops; Welding

## Forging machinery

Forging machine dies. J. Lee. *diag Ry Age (Mech ed)* 89:37 Ja '15

Forging machine dies. J. W. McDonald. *Il diag Ry Age (Mech ed)* 88:639-40 D '14

New forging slotter. *Il Iron Tr R* 55:1088 D 10 '14

Rolling tapered forgings. F. H. Blakeslee. *Il Mach* 21:909-10 Jl '15

Uses of the quick forging press; abstracts. A. J. Capron. *Il diag Iron Tr R* 57:683-5 O 7 '15; *Iron Age* 96:1224-5 N 25 '15

Form factor. See Electric waves

## Formamid

Conductivity and viscosity of solutions of electrolytes in formamid. P. B. Davis, W. S. Putnam and H. C. Jones. *Il diag J Fr Inst* 180:567-601 N '15

## Formates

Studies in conductivity; the conductivity of some formates and of hydrogen chloride in (anhydrous) formic acid; cases of apparent agreement of strong electrolytes with the mass law. H. I. Schlesinger and A. W. Martin. *diag Am Chem Soc J* 36:1589-1620 Ag '14

## Formic acid

Determination of formic acid in ketchup. C. A. Peters and L. P. Howard. *J Ind & Eng Chem* 7:35-7 Ja '15

Free energy of formation of formic acid. G. E. K. Branch. *diag Am Chem Soc J* 37:2816-26 O '15

## Forsyth dental infirmary, Boston

Two dental buildings. H. D. Eberlein. *Il plans Arch Rec* 37:532-4 Je '15

## Fort Worth, Texas

## Bridges

Design and construction of the Main street reinforced concrete viaduct. S. W. Bowen. *diag Eng & Contr* 43:211-17 Mr 10 '15

Methods and costs in constructing the 450-ft. East Fourth street viaduct. E. W. Robinson. *Il Concrete Cem* 5:231-8 D '14

## Fortification

German on permanent fortifications. *Sci Am* 113:374 O 30 '15

Improvised defenses. *Il Sci Am S* 80:100 Ag 14 '15

Mining and countermining of fortifications. *Il Sci Am* 111:464-5 D 5 '14

See also Coast defense; Intrenchments

## Foundation soils

Boston foundations. J. R. Worcester. 26 fold maps Boston Soc C E J 1:1-29 Ja '14; Discussion. 1:179-248, 395-417 Ap, S '14

City founded on sawdust: how part of Muscatine, Iowa, came to be built on such a foundation. *diag map Eng Rec* 71:496-7 Ap 17 '15

Data requested on the bearing value of soils. *Eng & Contr* 43:475 My 26 '15

Distribution of vertical soil pressures; tests at Engineering experiment station of Pennsylvania state college. J. A. Moyer. *Il Eng Rec* 71:330-2 Mr 18 '15

Lateral pressure and resistance of clay, and the supporting power of clay foundations. A. L. Bell. *Engineer* 110:124 Ja 29 '15

Soil-bearing test with confined plunger. *Il diag Eng N* 74:651-2 S 30 '15

Topography of the bed-rock under Chicago. R. Peattie. maps W Soc E J 19:590-4 Je '14; Same cond. *Eng & Contr* 42:605-7 D 30 '14; Discussion. W Soc E J 18:594-611 Je '14

## Foundations

Anchoring foundation bolts in concrete. T. Croft. *diag Power* 41:841 Je 22 '15

Building a lighthouse on shifting sand. H. J. Shepstone. *Il Sci Am* 112:287-8 Mr 27 '15

Concrete foundations for houses. G. L. McMurphy. *Il diag Bldg Age* 37:65-6 D '15

Concrete pile and cylinder foundations at Charleston. *Il diag Eng N* 74:928-9 N 11 '15

**Foundations—Continued**

- Construction of tower foundations; abstract. F. C. Connery. *diags Elec W* 66:136 JI 17 '15
- Court rules on validity of foundation patent. *Eng Rec* 71:154-5 Ja 30 '15
- Foundation work and the skyscraper. *Sci Am* 112:560 Je 5 '15
- Foundations for high towers at Darien, C. Z. I. W. Dye. *II diag Eng N* 73:1178-9 Je 17 '15
- Foundations for transmission line towers and tower erection. J. A. Walls; J. B. Leeper; W. E. Mitchell; P. M. Downing; F. C. Connery. *diags pls Am Inst E E Pro* 34:1167-87, 1869-77 Je-JI '15; *Abstracts. Elec W* 66:8-10 JI 3 '15; *Eng N* 74:159-61 JI 22 '15; Discussion. *Am Inst E E Pro* 34:3117-26 D '15
- Grouting or cushioning stand pipe bases; abstracts. C. W. Sherman. *Munic J* 39:812 N 25 '15; *Eng & Contr* 44:110-11 N 24 '15
- Methods and plant used in constructing the foundations for the Field museum of natural history, Chicago, Ill. *II plans Eng & Contr* 44:402-5 N 24 '15
- Novel method of excavating for the foundation of a bank building in Stockholm, Sweden. K. P. Billner. *Eng & Contr* 44:113 Ag 11 '15
- Pier and pile foundations on earth and rock. *II plan Eng N* 74:632-3 S 30 '15
- Putting down deep foundation piers in Long Island City. *diags Eng N* 73:231-3 F 4 '15
- Repairing building supports and foundations with concrete. *II Concrete Cem* 6:45-6 Ja '15
- Retaining walls on soft foundations. W. S. Lacher. *II diags W Soc E J* 20:232-47 Mr '15; Same cond. *Eng & Contr* 43:576-9 Je 30 '15; Abstract. *Ry Age* 53:411-13 Mr 5 '15; Discussion. *W Soc E J* 20:247-65 Mr '15
- Settlement of two grain elevators. *Eng N* 73:872-3 My 6 '15
- Sinking foundations through steel and concrete. *II Eng N* 74:988-9 N 18 '15
- Straightening a tall leaning factory chimney by a new method. T. S. Clark. *diags Eng N* 73:266-7 F 11 '15; Same. *Power* 41:408 Mr 23 '15; Same. *Eng & Min J* 99:822 My 8 '15; Same. *Ind Eng* 15:66-7 Ag '15
- Structural steel supports for large steam turbines. *diags plan Eng N* 73:66-9 Ja 14 '15
- Tower foundations for the Cristobal-Balboa transmission line. I. W. Dye. *II diags Eng Soc W Pa* 30:973-90 Ja '15; Same. *Ry R* 56:728-31 My 39 '15; Same cond. *Eng & Contr* 44:317-20 O 30 '15
- See also* Bridges—Foundations and piers; Buildings; Caissons; Cellars; Cofferdams; Column footings; Concrete piling; Cribbs; Concrete; Dams—Foundations; Foundation soils; Pavements—Foundations; Piers; Piles and pile driving; Shoring and underpinning; Walls
- Founders**
- Proper clothing prevents injury; what foundry operatives should wear. *II Foundry* 43:375-7-8 '15; Same cond. *Eng M* 49:758 Ag '15
- Founders' association, National.** *See* National founders' association
- Foundries**
- American bronze company's new plant. G. W. Grupp. *II plan Metal Ind n s* 13:447-9 N '15
- Buffalo electric steel foundry. H. C. Estep. *II plan Iron Tr R* 56:215-20 Ja 28 '15; Same. *Foundry* 43:1-6+ Ja '15
- Converter foundry of large capacity. E. F. Cone. *II plan Iron Age* 96:669-74 S 28 '15
- Detroit steel castings company's plant. *II plan Iron Age* 96:701-6 S 28 '15
- Floating foundry of the U. S. S. Vestal. F. M. Perkins. *II plan Foundry* 43:311-15 Je '15
- Ford methods and the Ford shops. H. L. Arnold. *II plans Eng M* 48:524-50 Ja '15
- Ford raw materials project. *Iron Age* 96:395 Ag 12 '15
- Foundry construction for light castings. *II plan Iron Age* 96:917-21 O 21 '15
- Foundry in Pittsburgh district: new plant of Cyclops foundry co. *II Iron Tr R* 56:174-5 Ja 21 '15
- Gray-iron foundry of instructive design; advantages of a clean and orderly operation as maintained by the Textile machine company, Reading, Pa. *II Iron Age* 95:987-91 My 6 '15

- How boiler and greenhouse parts are molded. E. C. Kreutzberg. *II plan Foundry* 43:253 JI '15
- How titanium-aluminum bronze is produced. C. Vickers. *II Foundry* 43:277-8 JI '15
- Implement foundry of Deere & co. *II Iron Age* 95:88-92 Ja 7 '15
- Interesting steel casting plant; Dutcher works of the Prime steel co., Milwaukee. *II Iron Tr R* 56:427-8 F 25 '15
- Iron foundry for Werner & Pfleiderer company's manufacturing plant, Saginaw, Mich. *II diag plan Iron Age* 96:688-91 S 23 '15
- Metamorphosis of the foundry. R. A. Bull. *Iron Tr R* 57:637-8+ S 30 '15
- Modern sheet metal machinery plant. *II plans Metal Work* 83:127-9 Ja 15 '15
- New foundry for making machinery castings; equipment of the Putnam machine co., Fitchburg, Mass. *II Foundry* 43:281-3 JI '15
- New malleable foundry; plant of Hammond malleable iron co. *II plan Iron Tr R* 56:859-60 Ap 29 '15; Same. *Foundry* 43:204-5+ My '15
- Problems involved in industrial pioneering. L. L. Anthes. *Foundry* 43:82-3 F '15
- Studebaker corporation gray-iron foundry at South Bend, Ind. *II Iron Age* 95:840-1 Ap 15 '15
- Two-story foundry for continuous operations. G. K. Hooper. *Foundry* 43:185-6 My '15
- See also* Brass foundries; Electricity in foundries; Founders; Foundry accounting; Foundry management; Foundry practice, and other headings beginning Foundry

**Accidents**

- When the ladle chain broke. L. Forrester. *Foundry* 43:261-2 JI '15

**Equipment and supplies**

- Agricultural castings made at minimum cost; modern foundry at Moline, Ill. J. F. Ervin. *II plans Foundry* 43:86-92 Mr '15
- Annual exhibit of foundry equipment. *II Iron Age* 96:824-6 O 7 '15
- Brass foundry equipment and management. W. H. Parry. *Metal Ind n s* 13:61, 186, 452 F, My, N '15
- Core-oven mechanical draft installation. *II diag Iron Age* 96:1163-4 N 18 '15
- Cranes for the machine shop and foundry. H. M. Lane. *diags Iron Age* 96:240-8 JI 29 '15
- Efficient methods of the Yale & Towne mfg. co. and details of its specially-equipped shop. H. C. Estep. *II plans Foundry* 43:129-37 Ap '15; Same (Castings for locks and hardware). *Iron Tr R* 56:809-16+ Ap 22 '15
- Exhibitors and what they'll exhibit; Atlantic City, Sept. 25-Oct. 1, 1915. *Foundry* 43:341-4 S '15
- Foundry and machine exhibition, Atlantic City, Sept. 25-Oct. 1. *II Foundry* 43:398-404 O '15
- Foundry core print rack. W. H. Parry, jr. *Foundry* 43:454 N '15
- Foundry exhibits at Atlantic City. *II Iron Tr R* 57:639-44 S 30 '15
- Foundry tumbling barrel. *II Iron Age* 94:1525 D 31 '14
- Handy flask clamp. J. F. Buchanan. *II diag Foundry* 43:242-3 Je '15
- How boiler and greenhouse parts are molded. E. C. Kreutzberg. *II plan Foundry* 43:249-57 JI '15
- Improved drop release for foundry scrap breaker. J. V. Pierce. *diag Mach* 21:496 F '15
- Labor saving devices in Texas foundry. *II Iron Age* 95:341-3 F 11 '15
- Miscellaneous stands for use in the foundry. A. Hill. *diags Foundry* 43:301-3 Ag '15
- Modern foundry pig-iron mixer; operating and chemical results with blast-furnace and coke-oven gases; abstract. O. Simmersbach. *Iron Age* 96:812-13 O 7 '15
- Modern iron founding. R. Onions. *II diags Engineer* 119:411-13 Ap 23 '15
- Selecting grinding wheels for foundry use. C. F. Dietz. *Foundry* 43:115-20 Mr '15; Same. *Iron Tr R* 57:314-18+ Ag 12 '15
- Skim gate that skims. J. H. Anderson. *diags Foundry* 43:243 Je '15

**Foundries—Equipment and supplies—Continued**  
 Snap flasks. Metal Ind n s 13:84-5 F '15

*See also* Casting machines; Crucibles; Electricity in foundries; Fire brick; Foundries—Safety devices; Foundry machinery; Molding machines; Sand, Foundry

#### Inspection

How the product of the foundry is inspected. E: Godfrey. Foundry 43:222-4 Je '15; Same cond. Iron Age 95:898-9 Ap 22 '15

#### Laws and regulations

*See* Foundry laws

#### Lighting

Artificial light for foundries. Eng M 49:589 JI '15

Good light—a safety factor in casting plants. Foundry 43:316-18 Je '15

#### Safety devices and measures

Chipping boss as an optimist. C. Yost. diag. Foundry 43:463-4 N '15

Fifty safety rules for the operation of cranes. Foundry 43:16-17 Ja '15

Good natural light—a safety factor. Eng M 49:435-6 Je '15

How to increase safety of cupola operations. II diag Foundry 43:445-6 N '15

National founders' association 19th annual convention. Iron Age 96:1243 N 25 '15

National safety council foundry safety meeting; abstracts of papers. Iron Age 96:982-3 O 28 '15

Ohio foundry conference. Iron Age 95:1014-15 My 6 '15

Proper clothing prevents injury. II Foundry 43:375-7+ S '15; Same cond. Eng M 49:753 Ag '15

Safe wheelbarrows and trucks. diag Ind Eng 15:43-4 F '15; Same. Foundry 43:365-6 JI '15; Same. Iron Tr R 57:396+ Ag 26 '15; Same cond. Am Ind 15:supl-4 JI '15

Safety in foundry operations. M. W. Alexander. II Metal Ind n s 13:198-9, 242-3, 284-6 My-JI '15

Safety in tumbling mill operations. II diag Foundry 43:144-6 Ap '15

#### Ventilation

Efficient methods of the Yale & Towne mfg. co. and details of its specially-equipped shop. H. C. Estep. II Foundry 43:133-5 Ap '15; Same (Castings for locks and hardware). Iron Tr R 56:810-14 Ap 22 '15

#### Foundry accounting

American foundrymen's association committee recommends universal cost keeping system. Foundry 43:451-4 N '15

Analysis of the foundry cost. J. K. Mason. Foundry 43:8-12 Ja '15

Cost keeping in the brass foundry. C. O. Skeeper. Metal Ind n s 13:497-9 D '14

Finding costs in the steel foundry. G. Muntz. Iron Tr R 57:482-4 S 9 '15

Revision of the A. F. A. standard cost system. H. Emerson. Foundry 43:7-8 Ja '15

Uniform basis for figuring foundry costs. Iron Age 96:1118-21 N 11 '15

#### Foundry costs

Cupola operation for continuous pouring. J. F. Ervin. II Iron Age 96:183-5 JI 22 '15

Graphic method of estimating core costs. E: S. Dean. Iron Age 95:1013 My 6 '15

*See also* Foundry accounting

**Foundry education.** *See* Foundry, practice—Study and teaching

#### Foundry laws

New York state rules governing casting plants. Foundry 43:295-7 Ag '15; Same. Iron Tr R 57:312-13+ Ag 12 '15

Pennsylvania foundry code. Iron Age 96:955-6 O 21 '15

#### Foundry machinery

Crane sand cutting machine. II Iron Tr R 56:88-90 Ja 7 '15; Same. Foundry 43:77-9 F '15

Duplex shaker. II Metal Ind n s 13:434 O '15

How to make cores in multiple. II Iron Tr R 56:180-2 Ja 21 '15

Industrial control in the foundry. R. H. McLain. II Am Inst E E Pro 34:587-97 Ap '15; Same. Foundry 43:201-3 My '15; Abstract, with discussion. Elec R & V Elec'n 66:777-8 Ap 24 '15; Discussion. Am Inst E E Pro 34:2984-96 D '15

Machines for breaking pig iron. II Iron Tr R 56:1089 My 27 '15

Manufacture of cores. W. J. Reardon. II Metal Ind n s 13:236-9 Je '15

Motor-driven gyratory riddle. II Foundry 43:379 S '15

Pneumatic drop machine for the foundry. G. S. Evans. II Iron Age 96:674-5 S 23 '15

Pouring systems for gray-iron foundries. II Iron Age 96:1123-5 N 11 '15

*See also* Casting machines; Charging machines; Molding machines

#### Exhibitions

Annual exhibit of foundry equipment. II Iron Age 96:824-6 O 7 '15

Annual exhibition at foundrymen's convention, Atlantic City, Sept. 25 to Oct. 1. Iron Tr R 57:580-3 S 23 '15

Exhibitors and the products displayed, Atlantic City, Sept. 25-Oct. 1. Iron Age 96:694-700 S 23 '15

Exhibitors and what they'll exhibit; Atlantic City, Sept. 25-Oct. 1, 1915. Foundry 43:341-4 S '15

Foundry and machine exhibition, Atlantic City, Sept. 25-Oct. 1. II Foundry 43:398-404 O 15

Foundry and machine exhibition, Atlantic City, Sept. 25-Oct. 1. Metal Ind n s 13:406-9 O '15

Foundry exhibits at Atlantic City. II Iron Tr R 57:639-44 S 30 '15

#### Foundry management

Applying scientific management. H. K. Hathaway. Iron Tr R 57:739-42+, 787-93 O 14-21 '15; Same. Foundry 43:440-4, 502-7+ N-D '15

Automobile foundry core-room economies. II Iron Age 95:131-3 Ja 14 '15

Commercial problems of the foundry. R. Moldenke. Iron Age 96:707-9 S 23 '15

Congestion in foundries. H. M. Lane. Iron Age 95:999 My 6 '15

Departmental co-operation in foundry work; how the casting plant can aid the sales department. W: H. Barr. Foundry 43:121-3 Mr '15; Same cond. Iron Age 95:798-9 Ap 8 '15

Efficiency in the brass foundry. W. R. Dean. Metal Ind n s 13:327-9 Ag '15

Eliminating waste motion in molding. R. E. Kennedy and J. C. Pendleton. II Iron Age 94:662-4 S 17 '14; Same. Ind Eng 14:428-6 N '14

First principles of shop planning. F. M. Perkins. II Foundry 43:366-73 S '15

Ford methods and the Ford shops. H. L. Arnold. II plans Eng M 48:524-50 Ja '15

Foundry use of non-ferrous scrap metals. F. M. Perkins. II Metal Ind n s 13:140-2, 194-7 Ap-May '15

How to increase the output of your foundry. G. K. Hooper. Foundry 43:93-5 Mr '15; Same cond. Iron Age 95:352-3 F 11 '15

Important problem of obtaining new work. H. J. McMurtrie. Foundry 43:371-2 JI '15

Leaves from the diary of a malleable man. L. E. Gilmore. Iron Age 95:42-4 Ja 7 '15

Metamorphosis of the foundry. R. A. Bull. Foundry 43:415-17 O '15

National founders' association 19th annual convention. Iron Age 96:1242-7 N 25 '15

Operating a foundry on a scientific basis: a large Detroit shop specializing in aluminum castings. F: A. Parkhurst. II Foundry 42:443-7, 479-86; 43:21-6, 53-8, 107-10 N '14-Mr '15

Practical follow-up system for the foundry. T. A. St. Clair, Jr. Foundry 43:319-21 Ag '15

Principles of continuous melting applied. J. F. Ervin. Iron Age 96:686-7 S 23 '15

Promise-keeper for the foundry. R. E. Wood. Foundry 43:237-8 Je '15

Reclaiming brass sweepings. A. W. Lemme. Iron Age 95:946 Ap 29 '15; Same. Foundry 43:191-3 My '15; Same. Metal Ind n s 13:187-8 My '15

Selling price of castings. A. O. Backert. Iron Tr R 56:228-30+ Ja 23 '15

Shop management and what it means. E. W. Wallbank. Foundry 43:299-300 Ag '15

**Foundry management—Continued**

- Success and failure in the foundry. A. Klefer. plan Foundry 43:297-8 Ag '15
- Training in foundry work that is worth while; the course at the University of Illinois. R. E. Kennedy and J. H. Hogue. *Il Foundry* 43:405-11 O '15; Same. *Iron Tr R* 57:617-23 S 30 '15
- Where are the profits in the foundry business? A. G. Dean. Foundry 43:74-5 F '15
- Where's that pattern? and how to locate it. H. A. Russell. *Il Foundry* 43:263-5 J1 '15
- See also* Foundries—Safety devices and measures; Foundry practice; Foundry records; Foundry sanitation
- Foundry practice**
- American foundrymen's association annual convention, Atlantic City. Foundry 43:385-94 O '15
- American foundrymen's association annual convention, Atlantic City, N. J. *Iron Tr R* 57:694-701 O 7 '15
- American foundrymen's association convention, Atlantic City, Sept. 27-Oct. 1; abstract of papers and discussion. *Iron Age* 96:814-19, 822-4 O 7 '15
- Applications of cores in modern molding. R. A. Bull. *Iron Age* 96:784-6 S 30 '15; Same. *Iron Tr R* 57:785-9+ O 21 '15; Same. Foundry 43:470-1+ N '15
- Arc welding and its application in the metal-working industry. J. F. Lincoln. *Elec R & W Elec'n* 86:1161-2 Je 19 '15; Same cond. Foundry 43:139-40 Ap '15; Excerpts. *Iron Age* 95:949 Ap 29 '15
- Babbitt bearing mold. S. Sucram. *diag Mach* 21:532 Mr '15
- Buffalo electric steel foundry. H. C. Estep. *Il plan Iron Tr R* 56:315-20 Ja 28 '15; Same. Foundry 43:1-6+ Ja '15
- Care in melting zinc. R. Job and F. F. White. *Il Iron Age* 96:199 J1 22 '15
- Causes of coke troubles in the foundry. *Iron Age* 94:1348-9 D 10 '14
- Common sense-steel foundryman's great asset. S. Muntz and S. Roubieu. *Il Foundry* 43:175-8 My '15; Same. *Iron Tr R* 57:949-52 N 11 '15
- Converter foundry of large capacity. E. F. Cone. *Il plan Iron Age* 96:669-74 S 23 '15
- Drop-pouring process of casting: the solution of a difficult brass foundry problem. E. A. Barnes. *Il Metal Ind n s* 13:511-12 D '14
- Electric furnace in the foundry. J. H. Gray. *diag Iron Age* 96:798-800, 878-81 O 7-14 '15
- Electric furnace in the foundry. R. C. Gosrow. *Met & Chem Eng* 13:882-3 D 1 '15
- Ford methods and the Ford shops. H. L. Arnold. *Il plans Eng M* 48:524-50 Ja '15
- Foundry economies in the Ford motor plant. *Il diag Iron Age* 96:680-3 S 23 '15
- Foundry transfer pits. H. M. Lane. *Iron Age* 95:820-1 Ap 8 '15
- Functions of sand binders. H. M. Lane. *Metal Ind n s* 13:421-3 O '15
- Getting the most from molding machines. P. R. Ramp. *diag Iron Age* 96:1-4 J1 1 '15
- Heat losses from an electric furnace. W. H. Wills and A. H. Schuyler. *Iron Age* 96:1052-3 N 4 '15
- How boiler and greenhouse parts are molded. E. C. Kreutzberg. *Il plan Foundry* 43:249-57 J1 '15
- How producer gas is used for drying molds and cores and for heating ladles in English foundries. *Il Foundry* 43:229-30 Je '15
- How radiator cores are made efficiently. E. C. Kreutzberg. *Il Foundry* 43:471-3 D '14
- How sewing machine parts are molded and cast. H. C. Estep. *Il Foundry* 43:345-51 S '15
- How Stout institute students cast a gasoline engine. F. F. Hillix. *Il Foundry* 43:99-102 Mr '15
- How to eliminate defects in steel castings. J. H. Hall. Foundry 43:146-51 Ap '15; Same. *Iron Tr R* 57:225-9+ J1 29 '15
- How to get high core efficiency. H. M. Lane. *Iron Age* 96:684-6 S 23 '15
- How to operate the sand-blast efficiently. J. M. Betton. Foundry 43:182-3 My '15
- Huge flywheel for Ford plant. *Il Automobile* 32:505 Mr 18 '15
- Liquid fuel for foundry cupolas. E. F. Cone. *diag Iron Age* 95:1058-9 My 13 '15

- Machine-made cores. W. D. Fraser. *Il Foundry* 43:160 Ap '15
- Making car wheels at the Lenoir car works. G. S. Evans. Foundry 43:351-3, 428-31, 485-9 S-N '15
- Making cores for an intricate casting. J. L. Sendner. *Il Foundry* 43:143-4 Ap '15
- Making sectional molds for die-cast nameplates. E. K. Hammond. *Il Mach* 21:554-7 Mr '15
- Making small gear wheels with a molding machine. R. A. Miles. *Il diag Foundry* 43:161-3 Ap '15
- Molding and casting a bronze monument. W. N. Nelly. *Il Metal Ind n s* 13:93-4 Mr '15
- Molding machines and pattern mounting. J. F. Eryin. *Iron Age* 95:721-4 Ap 1 '15
- Molding the new Cadillac eight-cylinder motor. H. C. Estep. *Il Foundry* 43:171-4 My '15
- Oil firing in foundry practice. W. N. Best. *Iron Age* 95:870-1 Ap 15 '15
- Old piston used for a core box. A. F. Albert. *diag Mach* 21:748 My '15
- Opportunities for the foundry engineer; abstracts. W. F. Prince. Foundry 43:63-4 F '15; *Iron Age* 95:146-8 Ja 14 '15
- Packing ingot molds. S. K. Eastwood. *diag Iron Age* 95:351 F 11 '15
- Plaster matches for use on machine or floor. A. Hill. Foundry 43:238-9 Je '15
- Precision castings. E. Buckingham. *Il diag Metal Ind n s* 13:11-13 Ja '15
- Present-day aspects of English foundry practice. J. Horner. *Il Metal Ind n s* 13:97-8, 146-8 Mr-Apr '15
- Reducing the cost of foundry patterns. D. Gordon. *Il diag Iron Age* 95:1277-9 Je 10 '15
- Sand mixing plant for a large foundry. *Il Iron Age* 94:1273-5 D 8 '14
- Scientific operation of a cupola. D. Townsend. *Il diag Iron Tr R* 57:133-5 J1 15 '15; Same. Foundry 43:322-4 Ag '15; Same. *Iron Age* 95:590-1 Mr 11 '15
- Steel casting plant at Oakland, Cal. *Il Iron Age* 95:1387-8 Je 24 '15
- What's the matter with the foundries? J. P. Brophy. *Mach* 22:141 O '15
- Would the castings have come straight? W. F. Barrows. Foundry 43:19 Ja '15
- See also* Aluminum founding; Brass founding; Cast iron; Copper founding; Cupola furnaces; Die casting; Electric furnaces; Electricity in foundries; Foundries; Foundry machinery; Iron founding; Steel castings

**Study and teaching**

- Teaching foundry practice by mail. *Il Foundry* 43:65-8 F '15
- Training embryo foundry leaders in school; outline of the course of Wentworth institute. E. A. Johnson. *Il Foundry* 43:306-10 Ag '15
- Training in foundry work that is worth while; the course at the University of Illinois. R. E. Kennedy and J. H. Hogue. *Il Foundry* 43:405-11 O '15; Same. *Iron Tr R* 57:617-23 S 30 '15

**Tables, calculations, etc.**

- Formulas for finding the weights of castings. W. L. Tryon. Foundry 42:8a, 50a, 226a, 336a, 406a, 456a, 484a Ja-F, Je, S-D '14
- Weight of rods or cylinders per running inch. W. L. Tryon. Foundry 43:16a, 58a Ja-F '15
- Foundry records**
- Where's that pattern? and how to locate it. H. A. Russell. *Il Foundry* 43:263-5 J1 '15
- Foundry sand. *See Sand, Foundry*
- Foundry sanitation**
- New York state rules governing casting plants. Foundry 43:295-7 Ag '15; Same. *Iron Tr R* 57:312-13+ Ag 12 '15
- See also* Foundries—Ventilation
- Foundry standards**
- Standard specifications for the foundryman. Foundry 43:258-61 J1 '15
- Foundry symbols**
- Operating a foundry on a scientific basis. F. A. Parkhurst. *Il Foundry* 42:479-86 D '14
- Pattern storage systems for factories. J. G. Shirley. *Iron Age* 96:304-6 Ag 5 '15

- Foundrymen's association, American. See American foundrymen's association
- Fountains**  
 Nikola Tesla's fountain. *Il Sci Am* 112:162 F 13 '15  
*See also* Drinking fountains; Springs
- Fraction calculator. See Calculating machines
- Fractions, Continued  
 Use of continued fractions in mechanical problems. W. W. Johnson. *Il diag Mach* 21:802-4 Je '15
- Fractures**  
 Device for treatment of dislocated and fractured lower limbs. *Il Sci Am* 113:364- O 23 '15  
 Quick mending of broken bones. *Sci Am* S 78: 411 D 26 '14
- Framing (building)**  
 Design and construction of the 435-ft. steel framed tower of jewels at the Panama-Pacific international exposition. F. S. M. Harris. *Il diag Eng & Contr* 43:47-54 Ja 20 '15; Same cond. *Eng N* 73:866-72 My 6 '15  
 Exterior wooden framing of the tower of jewels, Panama-Pacific international exposition. plans *Eng & Contr* 43:377-9 Ap 28 '15
- France**  
*See also* Printing—France
- Commerce  
 Commercial organizations in France. A. J. Wolfe. *U S Bur For & Dom Com* 98:1-75 '15  
 Commercial policy  
 Government institutions for promotion of commerce. A. J. Wolfe. *U S Bur For & Dom Com* 98:57-75 '15
- Industries and resources  
 French automobile industry in good condition. *Il Automobile* 33:101-2 Ja 21 '15  
 French steel plants in war time. F. Miltoun. *Iron Age* 95:940-2 Ap 29 '15  
 Iron and steel industry of northern France. L. De Launay. *Eng M* 49:735 Ag '15  
 Manufacture of chicory. J. Boyer. *Il Sci Am* S 80:40-2 Jl 17 '15
- Law  
 Commercial laws of England, Scotland, Germany and France. A. J. Wolfe and E. M. Borchard. *U S Bur For & Dom Com* 97:69-106 '15
- Social conditions  
 Housing reform in France. C. Aronovici. *Am Inst Arch J* 3:32-6 Ja '15
- Franchises**  
 Franchise value. *Elec R & W Elec'n* 65:1180-2 D 19 '14  
 New Jersey decision. H. S. Welsh. *Elec Ry J* 45:57 Ja 2 '15  
 Valuation of franchises. *Elec Ry J* 44:1331-3 D 19 '14  
*See also* Electric service companies—Franchises; Municipal franchises; Public service corporations—Franchises; Street railroads—Franchises
- Franklin, Benjamin, 1706-1790  
 Stove trade to honor Benjamin Franklin. *Il Metal Work* 84:88-9 Jl 16 '15
- Fraternity houses**  
 Phi Gamma Delta fraternity house, Philadelphia, Pa.; views and plans. *Brickb* 24:77, pl 40-3 Mr '15
- Fraud**  
 Machine greengoods game. *Mach* 21:288 D '14  
 Safeguarding the company's bank account. E. J. Buckley. *Metal Work* 83:389 Je 25 '15  
*See also* Competition, Unfair; Forgery
- Free energy**  
 Free energy of formation of formic acid. G. E. K. Branch. *diags Am Chem Soc J* 87:2316-26 O '15  
 Free energy of iodine compounds. G. N. Lewis and M. Randall. *Am Chem Soc J* 86:2259-68 N '14  
 Free energy of nitrogen compounds. G. N. Lewis and E. Q. Adams. *Am Chem Soc J* 87:2308-16 O '15
- Free energy of oxygen, hydrogen, and the oxides of hydrogen. G. N. Lewis and M. Randall. *Am Chem Soc J* 86:1969-93 O '14  
 Free energy of the various forms of elementary sulfur. G. N. Lewis and M. Randall. *Am Chem Soc J* 86:2468-75 D '14
- Free radicals. See Radicals (chemistry)
- Freedom of the seas. See Maritime law
- Freezing**  
 Why ice, in refrigerators, prevents freezing. J. D. Bonnar. *Sci Am* 113:249 Mr 13 '15  
*See also* Ice; Refrigeration and refrigerating machinery
- Freezing points**  
 Freezing point of low freezing explosives. A. La Motta. *Colliery* 35:317 Ja '15  
 Measurement of the freezing-point depression of dilute solutions. L. H. Adams. *diags Am Chem Soc J* 87:481-96 Mr '15
- Freezing tests**  
 Laboratory freezing tests. H. Parrine. *diags Concrete Cem* 5:256-7 D '14
- Freight**  
 National industrial traffic league annual meeting, Nov. 17-18. *Ry Age* 59:1004 N 26 '15  
*See also* Demurrage; Electric railroads—Freight; Freight car service; Freight cars; Freight handling; Freight ships; Railroads—Freight; Railroads—Rates
- Freight agents. See Railroads—Freight agents**
- Freight car service**  
 Car pooling arrangement on International & Great Northern and Sunset-Central lines. *Ry Age* 58:396 Ja 15 '15  
 Car service and the shipper. F. C. Maagly. *Ry R* 57:217-19 Ag 14 '15; Same cond. *Ry Age* (Mech ed) 89:233-4 Je '15  
 Car surpluses and shortages. *Ry Age* 59:490-1 S 17 '15  
 Carriers must furnish tank cars. *Ry R* 56:355-6 Je 19 '15  
 Comparative summary of freight cars in service; tabulation. *Ry Age* 59:661-2 O 8 '15  
 Danger of freight congestion. A. Hale. *Ry Age* 57:1052 D 4 '14  
 Economical car distribution. K. V. Conrad. *Ry Age* 58:357 F 26 '15  
 Hearing on embargoes. *Ry Age* 58:306 Ja 29 '15  
 Practical car pooling plan. F. M. Lucore. *Ry Age* 58:177-8 Ja 29 '15  
 Proper management of freight-car service. J. R. Cavanagh. *Ry Age* 59:700-1 O 15 '15  
 Report of committee on relations between railroads. *Ry Age* 59:1014-15 N 26 '15  
 Results of operation of Texas car equalization plan. O. C. Castle. *Ry Age* 58:943-4 Ap 30 '15  
 Shipper advocates car pooling. J. S. Marvin. *Ry Age* 58:13-14 Ja 1 '15  
 Standard home route card for freight cars. J. E. Campbell. *Ry Age* 58:300-2 Ja 29 '15  
 Transportation and car accounting officers; summer meeting. *Ry Age* 58:25-6 Jl 2 '15  
 Two plans for car pooling compared. A. Hale. *Ry Age* 58:356 F 26 '15  
 Unnecessary movement of empty freight cars; committee report of the General superintendents' association of Chicago. *Ry Age* 58:331-3 Ag 13 '15  
 Watch your cars and stop carload tracing. F. P. Barr. *Ry Age* 58:453-5 Mr 12 '15  
 Ways and means of expediting movement of cars loaded with preferred freight; abstract. M. J. O'Connor. *Ry Age* (Mech ed) 89:510 O '15  
*See also* Demurrage; Freight cars, Interchange of
- Car load  
 Heavier loading of cars. *Ry Age* 57:1033-4 D 4 '14  
 Improper loading of box cars. W. H. Sitterly. *Ry Age* (Mech ed) 89:233-4 My '15
- Freight cars**  
 Box car end door. G. E. McCoy. *diags Ry Age* (Mech ed) 89:173 Ag '15  
 Box car flush door. plan *Ry R* 57:185-6 Ag 7 '15  
 British-built hopper cars for the Bengal-Nagpur Ry. F. C. Coleman. *Il Ry R* 57:432-3 O 2 '15  
 Canadian built cars for the Belgian state railways. *diag Ry R* 57:441 O 2 '15



**Freight cars—Continued**

- Car service and the shipper. F. C. Maegly. Ry R 57:217-19 Ag 14 '15; Same cond. Ry Age (Mech ed) 89:298-4 Je '15
- Cars and locomotives ordered in 1914. Ry R 56:36-9 Ja 2 '15
- Defective box cars. C. L. Bundy. Ry Age (Mech ed) 89:80 F '15
- Defective box cars. L. Brown. Ry Age (Mech ed) 89:30 Ja '15
- Defects of modern box cars and their remedies. R. N. Miller. Ry Age (Mech ed) 89:171-3 Ap '15
- End construction of Canadian Pacific stock cars. diags Ry Age (Mech ed) 89:29-30 Ja '15
- Experiments to determine the forces imposed on a truck side frame and the stresses produced. L. E. Endsley. II diags Ry R 56:440-3, 494-7 Ap 3 '10 '15; Same cond. Ry Age (Mech ed) 89:127-9 Mr '15
- Freight car hand brake. diags Ry Age 58:944 Ap 30 '15; Same. Ry Age (Mech ed) 89:258-8 Mr '15
- Freight car statistics as compiled by the American railway association. Ry R 56:53-4 Ja 9 '15
- Freight car stenciling outfit. H. F. Blossom. diags Ry Age (Mech ed) 89:458 S '15
- Freight cars ordered in 1914. Ry Age 58:16-17 Ja 1 '15
- Freight equipment cars for the Russian government. II diags Ry R 57:419-22 O 2 '15
- Freight terminal car checking system. I. T. Tyson. Ry Age 58:748-9 Ap 2 '15
- Greatest weaknesses in box cars. R. P. Blake. Ry Age (Mech ed) 88:630-1 D '14
- Impact between freight cars in switching service. L. E. Endsley. II Ry R 57:10-15 J1 '15; Abstract. Elec Ry J 45:1164 Je 19 '15
- Manual slack adjuster. diags Ry Age 59:948 N 19 '15
- No greatest defect in box cars. C. E. Wood. Ry Age (Mech ed) 89:30 Ja '15
- Proposed design of standard M. C. B. box cars. plans Ry R 57:6-9 J1 '15
- Recent additions to Union Pacific freight equipment. II diags Ry Age 58:225-9 F 5 '15
- Roof structures for box cars. Ry R 56:459-60 Ap 3 '15
- Standard box car—a negative viewpoint. R. W. Burnett. Ry Age 58:403-4 Mr 5 '15; Same. Ry Age (Mech ed) 89:121-2 Mr '15
- Standardizing car construction. Ry R 56:389 Je 28 '15
- Steel frame box cars for the Illinois Central. II diags Ry Age (Mech ed) 89:78-80 F '15
- Strengthening of underframes. Ry Age (Mech ed) 89:498 O '15
- Thirty-ton stock car for the Canadian Pacific. Ry. R. W. Burnett. II diags Ry R 55:586-7 D 5 '14
- Wooden cars in freight trains. Ry Age (Mech ed) 88:631-2 D '14
- Wooden cars in freight trains. G. E. Smart. Ry Age (Mech ed) 88:581-2 N '14; Same. Ry R 56:595-6 D 5 '14
- See also Baggage and express cars; Brakebeams; Freight car service; Loading and unloading; Refrigerator cars; Tank cars; Train resistance

**Cost**

- Settlement prices for reinforced wooden cars; Master car builders' association committee report. Ry R 56:336-7 Je 19 '15

**Cost of maintenance**

- Cost of maintenance of equipment: a record of the Waugh draft gear. Ry R 56:56-7 Ja 9 '15
- Record of cost of maintaining car draft appliances. Ry R 56:294 F 27 '15

**Repair**

- Economies in freight car repairs. H. H. Harvey. Ry R 56:312-13 Mr 6 '15; Same. Ry Age (Mech ed) 89:129-30 Mr '15
- Freight car rehabilitation. Southern railway. diags Ry R 57:576-8 N 6 '15
- Freight car repairs under a piece work system. J. J. Tollin. Ry Age (Mech ed) 89:347-8 J1 '15
- Inspection and repairs of freight cars by piecework. J. J. Tollin. Ry Age (Mech ed) 89:457-8 S '15

- Promoting the proper handling of equipment. E. E. Betts. Ry R 57:497-500 O 16 '15
- Promoting the proper handling of equipment. W. H. Crawford. Ry R 57:563-4 O 30 '15
- Proposed bureau for clearing car repair accounts. C. F. Straub. Ry Age 59:161-2 J1 23 '15

**See also Railroads—Shops****Weighting**

- Reweighting and restenciling of cars. J. V. James. Ry Age 58:1128-9 My 28 '15

- Freight cars, Interchange of**  
Chief interchange car inspectors' and car foremen's association 17th annual convention. Ry Age (Mech ed) 89:522-5 O '15
- Interchange of cars. H. Boutet. Ry Age (Mech ed) 88:623-4 D '14
- Promoting the proper handling of equipment. E. E. Betts. Ry R 57:497-500 O 16 '15
- Promoting the proper handling of equipment. W. H. Crawford. Ry R 57:563-4 O 30 '15
- Freight cars, Steel**  
Bettendorf all-steel box car. II Ry R 56:801 Je 12 '15
- Narrow-gage cars for the Burma mines. Ry. F. C. Coleman. II plans Ry R 57:173-5 Ag 7 '15
- Recent additions to Union Pacific freight equipment. II diags Ry Age 58:225-6 F 5 '15
- Steel box car for the Canadian Pacific. II diags Ry Age 58:1420-2 Je 13 '15; Same. Ry Age (Mech ed) 89:399-401 Ag '15
- Steel gondolas for the Russian government. II Ry Age 59:898-9 N 12 '15
- Union Pacific steel freight cars. II diags Ry Age (Mech ed) 89:73-7 F '15
- Well car of 200,000 lb. capacity. II diags Ry Age (Mech ed) 89:397-8 Ag '15
- Freight claim association**  
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- Freight claims. See Railroads—Claims**
- Freight handling**  
Car dumping machine with improved features at Conneaut Harbor, Ohio. II plan Ry Age 59:890-2 Ag 27 '15
- Congestion of freight at New York piers. II Int Marine Eng 20:80 F '15
- Cost data for electric trucks in freight houses. Eng Rec 71:403 Mr 27 '15
- Economy gained by handling freight with electric trucks at marine terminals. II Int Marine Eng 20:124-5 Mr '15
- Facilities for shipping and freight handling at river ports. E. E. R. Tratman. Int Marine Eng 20:115 Mr '15
- Freight handling at Havana, Cuba. II Int Marine Eng 20:116-18 Mr '15
- Freight handling at railway marine terminals. C. A. Hardy. diags Int Marine Eng 20:103 Mr '15
- Handling freight with storage battery trucks. II Ry Age 57:1038-4 D 11 '14
- Handling of freight in terminals. R. H. Rogers. Am Inst E E Pro 34:3048-52 D '15
- How the operation of one local freight station was improved. C. B. Anderson. Ry Age 59:1005-7 N 26 '15
- Important principles in the handling of l.c.l. freight. C. G. Johnson. Ry Age 59:1007-9 N 26 '15
- Marine terminal machinery. H. Sawyer. Int Marine Eng 20:109-11 Mr '15
- Mercury freight house tractor truck. II Ry Age 58:361-2 F 26 '15
- Methods of handling L. C. L. outbound freight. E. H. Lee. Ry Age 57:1181-4 D 25 '14; Conclusions. Eng Rec 71:52 Ja 8 '15
- New marine terminals at Beaumont. H. M. Harding. plan Eng N 73:1072-3 Je 3 '15; Same. Int Marine Eng 20:299-300 J1 '15; Same cond. Eng Rec 71:721 Je 6 '15
- New York freight terminals, 1914. Ry Age 59:396-7 Ag 27 '15
- Points of attack in the terminal problem. J. A. Jackson. II Int Marine Eng 20:111-13 Mr '15
- Possibilities open to the central station in solving the freight terminal problem. J. A. Jackson. Gen Elec R 18:1142-4 D '15
- Reservoir effects in freight movements. R. H. Rogers. II Int Marine Eng 20:107-9 Mr '15

**Freight handling—Continued**

- Transfer facilities at marine terminals. H. M. Harding. *Int Marine Eng* 20:98-102 Mr '15
- Trucking l. c. l. freight. Rly R 56:352-3 Mr '15
- Unloading bananas by machinery. *Int Sci Am* S 79:209 Ap 3 '15
- Unloading cargoes by portable machines. *Int Marine Eng* 20:105-6 Mr '15
- See also Coal handling; Elevators, Inclined; Freight houses; Hoisting machinery; Loading and unloading; Lumber handling; Ore handling; Railroads—Terminals; Terminals

**Freight houses**

- Design and construction features of the Ocean steamship co.'s terminal at Savannah, Ga. *Plans Eng & Contr* 44:343-4 N 3 '15
- Important principles in the handling of l.c.l. freight. C. G. Johnson. *Ry Age* 59:1007-9 N 26 '15
- Pittsburgh North side freight station of the P. R. R. H. M. Phelps. *Plans Ry Age* 59:245-6 Ag 6 '15
- Ratproof freight house of the Panama railroad. *diag Ry R* 56:159 Ja 30 '15

**Freight rates**

- Development of inland water transportation. J. H. Bernhard. *Eng Rec* 72:332-4 S 11 '15
- See also Railroads—Rates

**Freight ships**

- Average draft of ocean vessels. *Eng N* 73:738 Ap 15 '15
- Conversion of cargo vessels into bulk oil carriers. F. K. Ruprecht. *Int Marine Eng* 20:165-6, 212-16, 258-9, 309-11, 340-3, 404-6 Ap-S '15
- Freight carrying on the Great Lakes. D. A. Willey. *Int Sci Am* S 79:360 Je 5 '15
- Freight steamer Nevada. *plans Int Marine Eng* 20:347-8 Ag '15
- Fruit carrying steamer van Hogendorp. F. C. Coleman. *Int diag plans Int Marine Eng* 20:67-71 F '15
- Influence of discharging appliances on the design of large ore carriers. J. Reid. *diag Engineer* 119:300-1 Mr 26 '15
- Lumber operations on the Atlantic coast; modern lumber steamer and complete terminals under construction for shipping lumber from Florida to New York. *diags Int Marine Eng* 20:126-8 Mr '15
- Repairs to lake freighter H. M. Hanna, Jr. *Int Marine Eng* 19:554-6 D '14
- Self-unloading freight steamer Huron. *Int diags Int Marine Eng* 20:52-3 F '15
- Steamer Francis Hanify. *Int diag plans Int Marine Eng* 20:30-2 Ja '15
- Steamship Edward Peirce. *plans Int Marine Eng* 19:559-60 D '14
- See also Tank ships

**Freight stations. See Railroads—Stations****Freight terminals. See Freight handling; Railroads—Terminals; Railroads—Yards; Terminals****Freight trains. See Railroads—Trains****Frequency changers**

- Parallel operation of frequency changers. G. H. Rettew. *diag Gen Elec* R 13:836-8 Ag '15

**Friction**

- Allowable friction values; effect of the speed of rotation on the operation of a friction clutch. B. D. Pinkney. *Mach* 21:793-4 Je '15
- Cutting down friction waste. J. C. Taylor. *Power* 42:488 O 5 '15
- Cylinder friction and lubrication testing apparatus. A. Flowers. *diag Power* 42:208-10 Ag 10 '15
- Friction drive. C. W. Larson. *Am Inst E E Pro* 34:2674-6 N '15
- Friction losses in the universal joint; abstracts. P. F. Walker and W. J. Malcolmson. *Iron Age* 94:1438-9 D 24 '14; *Am Soc M E J* 37:17-20 Ja '15
- How to reduce machine friction. N. G. Near. *Metal Ind n s* 13:409 O '15
- Recent tests of the effective force between driving belt and pulleys; abstract. A. Friedrich. *Am Soc M E J* 37:554-6 S '15

- Tests of frictional resistance of concrete on shale. E. L. Lasier. *Int diag Eng N* 73:156-8 JI 22 '15

- Theory of lubrication. L. Ubbelohde. *Gen Elec R* 18:966-72, 1074-81, 1118-21 O-D '15
- Theory of resistance to rolling of a hard body over a plastic surface; abstract. B. B. Schultz. *Am Soc M E J* 37:478-9, 555-8 Ag-S '15

See also Bearings; Lubrication and lubricants

**Frost**

- Frost 16 feet deep found under refrigerator plant. J. N. Jensen. *Int Eng Rec* 72:297 S 4 '15

**Frost protection**

- Self-lighting attachment for smudge pots. C. A. Byers. *Int Sci Am* 113:445 N 20 '15

**Frosted fruit. See Fruit, Frosted****Fructose pentacetate**

- Crystalline d-fructose pentacetate. C. S. Hudson and D. H. Brauns. *Am Chem Soc J* 37:1283-5 My '15

**Fruit**

- Pre-cooling of Canadian fruits. E. Smith. *Am Soc M E J* 37:190-1 Mr '15

See also Cannon ball tree; Osage orange; Tamarinds

**Fruit, Frosted**

- Sorting out frosted oranges and lemons. S. McKinstry. *Int Sci Am* 111:512 D 19 '14

**Fruit juices**

- Studies on fruit juices. H. C. Gore. *U S Agric Bul* 241:1-19 '15

**Fuel**

- Boiler plant of the Bessemer coal and coke company; using as fuel a mixture of coal and slate. W. O. Rogers. *Int diags plan Power* 41:798-801 Je 15 '15
- CO<sub>2</sub> and the character of fuel. T. H. Reardon. *Power* 41:574 Ap 27 '15
- Chart of relative values of fuels. R. A. Rover. *Power* 42:441 S 28 '15; Same. *Eng & Min J* 100:600 O 9 '15
- Coal substitutes; use of chalk fuel and peat proposed in England. *Sci Am* S 79:352 My 29 '15
- Comparison of the economy of powdered coal, oil and water gas for heating furnaces. C. F. Herington. *Eng N* 73:1156-8 D 10 '14
- Firing low-grade fuel and wastes. S. H. Bunnell. *Power* 41:373 Mr 16 '15
- Fuel values of coal gas and oil; operators of plants in Oklahoma compare costs on evaporation-unit basis. *Elec W* 65:1470 Je 5 '15
- Fuel values of coal, oil and gas. E. H. Hunter; L. G. Purtee. *Elec Ry J* 45:984 My 23 '15
- Future methods of utilizing coal. C. F. Hirschfeld. *Power* 41:438-9 Ap 6 '15; Same. *Sci Am* S 80:58-9 JI 24 '15
- Gas producers and concentration of power at mines. R. H. Fernald. *Colliery* 85:415-17 Mr '15
- How much CO<sub>2</sub> to expect with various kinds of fuel. V. J. Azbe. *Power* 42:712-14 N 23 '15
- Making fuel out of garbage. W. D. Hornaday. *Int Munic Eng* 48:304-5 My '15
- Saving fuel in heating a house. L. P. Breckenridge and S. B. Flagg. *U S Bur Mines Tech Pa* 97:1-33 '15; Same cond. (Firing various fuels in residence heaters) *Metal Work* 84:552-4, 584-6, 613-15 O 29-N 12 '15
- Steam generation in a wood-distilling plant. L. Eddy. *diag Power* 41:846 Je 22 '15
- World's supply of fuel and motive power. D. Clerk. *Engineer* 120:425-6 N 5 '15
- See also Alcohol as fuel; Automobile engines—Fuel; Blast furnace gas; Briquets; Calorimeters and calorimetry; Cinders; Coal; Coke; Furnaces; Gas, Natural; Gas and oil engines—Fuel; Gas as fuel; Heating; Lignite; Locomotives—Fuel; Peat; Petroleum as fuel; Smoke; Tar as fuel; Waste fuel; Wood as fuel

**Cost**

- Comparative furnace efficiency. R. J. Weitlaner. *Met & Chem Eng* 13:357-61 Je '15
- Furnace curves. R. J. Weitlaner. *Met & Chem Eng* 13:428 JI '15

## Fuel—Continued

## Testing

Evaporation tests with peat and peat coke as fuels. H. Winkelmann. *Am Soc M E J* 37: 289 My '15

Fuel-supply contracts and the progress of more scientific methods of purchase and control in America and Europe. J. B. C. Kershaw. *Met & Chem Eng* 13:393-6 Je '15

## Fuel economizers

Counter-current principle as applied to directly-fired and to waste-heat boilers: abstract. G. H. Gibson. *Am Soc M E J* 37:53-5 Ja '15  
Economizers in modern high-pressure power plants. G. C. Usher. *Power* 42:520 O 12 '15  
Economizers in modern high-pressure power plants. N. G. Reinicker. *Power* 42:655-6 N 9 '15

Flak street station, Chicago, economizers. T. Wilson. *diags Power* 42:277-8 O 5 '15

Fuel economy increased 12 per cent with economizers. *Elec W* 65:1834 Je 19 '15

Hartford economizer for Ford cars. *Il Horseless Age* 34:311-12 D 23 '14

Notes on economizer operation. *Locomotive* 30: 112-14 O '14

## Fuel economy

Analysis of dependent sequence as a guide to fuel economy. H. Emerson. *Ry R* 57:19-23 J 1 '15; Same cond. *Ry Age* 58:1057-9 My 21 '15; Same cond. *Ry Age* (Mech ed) 89:273-4 Je '15  
Coal and its economical use. P. S. Thompson. *Inst E E J* 53:184-7 Ja 15 '15; Abstract. *Elec W* 65:422-3 F 13 '15; Discussion. *Inst E E J* 53:187-90 Ja 15 '15

Coal, the big item in a steam power plant. *Power* 41:185 F 2 '15; Same. *Sci Am S* 79: 125 F 20 '15

Economic utilisation of coal and the production of cheap power. W. F. Reid. *Engineer* 120:92 J 23 '15

Efforts at fuel economy, Rock Island lines. W. J. Tollerton. *Ry R* 57:354-5 S 13 '15

Experiments in coal consumption. *Int Marine Eng* 20:41-2 Ja '15

Fuel economy and the proper utilisation of coal. W. A. Bone. *Engineer* 120:357-8 O 15 '15

Fuel economy on locomotives. *diag Ry R* 57: 181-5 Ag 7 '15

Fuel economy on the Great Western. *Il Ry Age* 58:195-7 Ja 29 '15

Full train tonnage and fuel economy. *Ry R* 56:815 Je 12 '15

Furnace curves. R. J. Wettianer. *Met & Chem Eng* 13:425-8 J 1 '15

Loss of combustible in ashes. *Power* 42:683-4 N 16 '15

Manila plant employees receive bonus for increasing coal economy. *Elec W* 66:694 S 25 '15

Preventing losses in factory power plants. S. J. H. White. *Iron Age* 95:778-9 Ap 8 '15; Excerpts (How daily records save the coal; How a 25 per cent. saving was made). *Sci Am S* 80:16, 19 J 1 3-10 '15

Reducing the fuel expense. J. F. Springer. *Il Am Ind* 15:28-30 My '15

Saving coal. C. Maler. *Ry Age* (Mech ed) 89: 442 S '15

U-tube carbon dioxide indicator. H. A. Cunningham. *Il diag Iron Age* 96:370-2 O 14 '15

See also Fuel economizers; Grates; Locomotives—Fuel

## Fuel stations. See Coaling stations

## Fuel testing

Wood and coal as fuel for steam boilers. H. B. Reynolds. tables Sibley J 80:14-20 O '15

## Full crew law. See Railroad law

## Fullagar engine

New type of internal combustion engine: abstract. H. F. Fullagar. *diags Am Soc M E J* 37:127-8 F '15

## Fulling

Difficulty in fulling overcome. *Textile World* 49:462-3 J 1 '15

Fulling mill wrinkles and streaks. *Textile World* 50:115-16 O '15

## Fulton (submarine tender)

Submarine tender Fulton: Diesel engines installed. *Il diag Int Marine Eng* 19:285-7 J 1 '14

Trials of the submarine tender Fulton: first United States naval vessel to be fitted with Diesel engines. *Il Int Marine Eng* 20:76-8 F '15

## Funnels

Pattern for irregular shaped copper funnel. *diags Metal Work* 84:6+ J 1 2 '15

## Furka railway

Furka railway; a new Alpine railway from the Rhône to the Rhine. A. Gradenwitz. *Il Sci Am S* 79:344-5 My 29 '15

## Furnace industry

Heading off complaints from furnace users. *Metal Work* 83:125-6 Ja 15 '15

Helping furnace dealers help themselves. *Metal Work* 83:11 Ja 1 '15

How to sell warm air furnaces at a profit. H. D. Campbell. *Metal Work* 83:43 Ja 1 '15

National warm air heating and ventilating association discuss warm air heating in convention. *Metal Work* 83:335-6 F 26 '15

Producers give assistance to distributors. *Metal Work* 83:37-8 Ja 1 '15

Warm-air furnace and the public. W. Wimmer. *Metal Work* 83:257 F 12 '15

## Furnace lining

Cement as furnace lining. H. L. Strong. *Power* 41:274-5 F 23 '15

Concrete as a furnace lining. J. C. Hawkins. *Power* 41:169-70 F 2 '15

Concrete not suitable for furnace linings. A. W. Uhl. *Power* 42:453-4 S 28 '15

Dolomite and slag furnace lining. *Eng & Min J* 100:885 N 27 '15

Repairing furnace linings with compressed-air gun and torch. A. Schwarz. *Met & Chem Eng* 13:582-3 S 15 '15

## Furnace pipes. See Furnaces, Hot air—Pipes and fittings

## Furnace shields

Tapping shield at Anaconda. *Il Eng & Min J* 99:494 Mr 13 '15

Water-cooled equipment for sheet mills. *Il diags Iron Age* 95:441-3 F 25 '15

## Furnaces

Air-cooled furnace arches increase efficiency. *diags Elec W* 65:1186 My 8 '15

Air excess in boiler furnace practice. D. F. Nisbet. Sibley J 29:122-3 Ja '15

Automatically maintaining constant ratio between air and coal supplied to furnaces. *Il diag Elec W* 65:104 Ja 9 '15

Bearing-babbitting furnaces. J. C. Donovan. *Il Elec Ry J* 46:153 J 24 '15

Chain screen doors for oven and furnace openings. *Il Sci Am* 113:233-4 S 11 '15; *Met & Chem Eng* 13:376-8 N 15 '15

Characteristics of firebrick for boiler furnaces. H. E. Tenney. *diags Elec W* 66:1086-7 N 13 '15

Corrugated furnaces for vertical fire-tube boilers. F. W. Dean. *diag Power* 42:103 J 1 20 '15

Factors governing the combustion of coal in boiler furnaces; a preliminary report. J. K. Clement. J. C. W. Frazer and C. E. Augustine. *Il diags U S Bur Mines Tech Pa* 63:1-41 '14; Excerpts. *Sci Am S* 79:359 Je 5 '15

Firebrick for boiler furnaces. A. D. Williams. *Power* 41:297-8 Mr 2 '15; Same cond. *Ind Eng* 15:107-8 S '15

Firebrick for boiler settings. W. A. Heisel. *Power* 41:883-7 Je 29 '15

Fusibility of coal ash in various atmospheres. A. C. Fieldner and A. E. Hall. *diags J Ind & Eng Chem* 7:402-6 My '15

Gas explosions in boiler furnaces. *diags Power* 41:553-4, 551-3, 719, 785-6 Ap 20, My 11, 25, Je 8 '15

Gas furnace for heating soldering irons. R. H. Parsons. plan *Elec Ry J* 46:24 J 1 3 '15

How smokeless combustion is secured by the Boston Edison company. *Il diag Elec W* 66: 469 Ag 28 '15

Industrial uses of gas. H. M. Thornton. *Il Am Gas Light J* 103:17-22 J 12 '15

Lynne furnace water arch. *diags Power* 42:677 N 16 '15

Metallurgical and special furnaces. O. Monnett. *diags Power* 41:432-3 Mr 30 '15

Morrow furnace system. *diag Power* 41:425 Mr 30 '15

**Furnaces—Continued**

- Nicholson furnace. *Il* diag Power 40:848 D 15 '14
- Results of changes in boiler furnace. M. B. Smith. diag Power 41:92-3 Ja 19 '15
- Return-tubular boiler furnace development. O. Monnett. diags Power 40:93-4 J1 21 '14; Same. Sci Am S 78:394-5 D 19 '14
- Staying a furnace arch. J. C. Hawkins. diag Power 41:800 My 4 '15
- Thermal insulation of high-temperature equipment. F. A. Boeck. diags Am Inst Min E Bul 104:1539-50 Ag '15; Excerpts. Iron Age 96:353-4 Ag 12 '15; Discussion. Am Inst Min E Bul 108:2513-19 D '15
- Typical industrial appliances. *Il* Am Gas Light J 103:85-7, 90-3 Ag 9 '15
- Use of corrugated furnaces for vertical fire tube boilers; with discussion. F. W. Dean. diag Am Soc M E J 37:445-6 Ag '15
- Wiegand chain screen door. *Il* Int Marine Eng 20:233-4 My '15; Power 42:81 J1 20 '15
- See also Blast furnaces; Boilers; Charging machines; Clinkers; Cupola furnaces; Electric furnaces; Fire pots; Firing; Foundry practice; Fuel; Fuel economy; Furnaces, Metallurgical; Grates; Kilns; Mechanical draft; Metallurgy; Smelting
- Repair**
- Cement-gun furnace repairs. Eng & Min J 99:866 My 15 '15
- Furnaces, Electric. See Electric furnaces
- Furnaces, Hot air**
- Efficiency ratings for warm air furnaces. A. C. Willard. *Il* diags Metal Work 83:932-5 Je 23 '15
- Evolution of warm air furnace construction. Metal Work 83:217-18 F 5 '15
- Frame building heated by warm air system. M. H. Reissler. *Il* plans Metal Work 84:400-1 S 24 '15
- Furnaces fall because poorly installed. Metal Work 83:410 Mr 19 '15
- Heating a cottage by warm air furnace. plans Metal Work 83:180 Ja 23 '15
- Heating a suburban house by furnace. *Il* diags plans Bldg Age 37:19-26 Mr '15
- Humidity control of warm air furnaces. C. E. Stewart. diag Metal Work 83:30 Ja 1 '15
- "New idea" pipeless furnace. *Il* Metal Work 84:371 Ag 27 '15
- Regulating warm air furnace practice; tentative recommendations for a standard of procedure. Metal Work 83:646-8 Ap 30 '15
- Return flue warm-air furnace. diag Metal Work 83:271 F 12 '15
- Rudy warm-air furnaces. *Il* Metal Work 84:626 N 12 '15
- Size of fire pot. Metal Work 84:620-1 N 12 '15
- Theory and practice in warm-air heating. Metal Work 83:661+; 84:109-10 My 7, J1 23 '15
- Warm air furnace design and installation. diags Metal Work 83:352-3, 375-6, 477-8, 509-11, 569-70, 640-1+, 813-14; 84:1-2, 80-1, 149-50, 387-8, 525-6, 575-6 Mr 5-12, 26-Ap 2, 16, 30, Je 4, J1 2, 16, 30, S 17, O 22, N 5 '15
- Warm air furnace fails to heat residence. W. H. James. plan Metal Work 84:281-2 Ag 27 '15
- Warm air furnace in trying location. *Il* plans Metal Work 83:327-30 F 26 '15
- Warm-air furnace practice. Metal Work 84:536 O 22 '15
- Warm air furnaces use coal, wood and oil fuel. *Il* Metal Work 83:411 Mr 19 '15
- Warm air heating association's convention. Metal Work 83:399-301 Je 18 '15
- Pipes and fittings**
- Determining correct sizes of furnace pipes. diag Metal Work 82:321-2 D 25 '14
- Modern practice of recirculating air effects economy and makes satisfied customers. G. D. Crain, Jr. Metal Work 82:769 D 11 '14
- Practical hints for furnace erectors. diags Metal Work 82:819-20 D 25 '14
- Practical side of furnace installation. Metal Work 84:111 J1 23 '15
- Reducing the fuel bill by saving the heat waste. Metal Work 83:356 Mr 5 '15
- Rules for warm-air furnace installation. Metal Work 84:488-91 O 15 '15
- Simple chart for designing furnace elbows. Metal Work 84:310-11 Ag 13 '15
- Simplified pattern for a Y fitting. diags Metal Work 83:253 F 12 '15
- Simplified pattern for metal center boot. W. Neubecker. diags Metal Work 84:669+ N 26 '15
- Theory and practice in warm-air heating. diags Metal Work 84:310-11, 329+, 558-9 S 3-10, O 29 '15
- Trunk-line system heats Michigan bungalow. *Il* plans Metal Work 84:436-7 O 1 '15
- Warm air furnace design and installation. diags Metal Work 83:352-3, 375-6, 813-14; 84:1-2, 80-1, 525-6, 575-6 Mr 5-12, Je 4, J1 2, 16, O 22, N 5 '15
- Warm-air trunk line system for residence. *Il* plans Metal Work 84:847-8 N 19 '15
- Warming and circulating air in residence. diags plan Metal Work 83:255-6 F 12 '15
- Why furnace failed to heat bed room. plans Metal Work 83:291 F 19 '15
- Furnaces, Metallurgical**
- Annealing oven for tires. W. E. Grum-Grzimallo. diags Iron Age 94:1397 D 17 '14
- Areagrams of open-hearth furnace flues. A. R. Mitchell. Iron Age 95:607-8 Mr 13 '15
- Bellevue heat-treating furnaces. *Il* Iron Age 96:1171-2 N 18 '15
- Carborundum and cork exhibits at the Panama-Pacific international exposition. *Il* Met & Chem Eng 13:458-60 J1 '15
- Case-hardening retorts and furnaces. R. A. Millholland. *Il* Iron Age 96:1111-14 N 11 '15
- Coal-dust fired reverberators at Washoe reduction works. L. V. Bender. Am Inst Min E Bul 97:73-81 Ja '15; Abstract. Am Soc M E J 37:188-9 Mr '15; Abstract. Met & Chem Eng 13:134 Mr '15
- Coal-dust fired reverberatory furnaces; discussion of the papers of D. H. Browne, L. V. Bender and R. E. H. Pomeroy. Am Inst Min E Bul 101:1174-86 My '15
- Coal-dust fired reverberatory furnaces of Canadian copper co. D. H. Browne. diags Am Inst Min E Bul 97:49-60 Ja '15; Same cond. Met & Chem Eng 13:182-4 Mr '15; Abstract. Am Soc M E J 37:187 Mr '15
- Comparative furnace efficiency. R. J. Weitlaner. Met & Chem Eng 13:357-61 Je '15
- Continuous rotary heat-treating furnace. F. M. Paull. *Il* Iron Age 96:569 S 9 '15; Same. Horseless Age 36:234 S 1 '15; Same. Sci Am 113:363 O 23 '15
- Description of nut, bolt and rivet shop of Upson nut co. with details of arrangement and equipment. R. V. Sawhill. *Il* plan Iron Tr R 56:1249-51 Je 17 '15
- English continuous billet furnace. *Il* diags Iron Tr R 57:841-2 O 28 '15
- English gas-fired melting furnaces. diag Am Gas Light J 102:140 Mr 1 '15
- Feeding reverberatory furnaces along the side walls. D. H. Browne. Eng & Min J 99:412-13 F 27 '15
- Fettling reverberatories. H. L. Charles. Eng & Min J 100:648-9 O 16 '15
- Flexible heat-treating installation. *Il* diag Iron Age 96:507-10 S 2 '15
- Furnace curves. R. J. Weitlaner. Met & Chem Eng 13:425-8 J1 '15
- Furnace for making steel from ore. diags Iron Tr R 57:743+ O 14 '15
- Heating an open-hearth furnace by tar. A. Greiner. Iron Age 95:1072-3 My 13 '15; Same. Engineer 119:495 My 14 '15; Same. Iron Tr R 56:1017-18 My 20 '15; Abstract. Met & Chem Eng 13:445 J1 '15
- Improvements for Ropp roasters. E. Hall. diag Eng & Min J 100:147-8 J1 24 '15
- Internally fired nail bluing furnace. *Il* Iron Age 95:1295-Je 10 '15
- Least roasting patents. diags Eng & Min J 99:282-4 F 6 '15
- Low-pressure oil-burning metallurgical furnaces. *Il* Met & Chem Eng 13:510-11 Ag '15
- Modern plant for rolling iron; St. Louis screw co. H. C. Estep. *Il* diags plans Iron Tr R 57:82-9+ J1 8 '15
- New ingot heating furnace. *Il* diags Engineer 120:162-4 Ag 13 '15
- New iron mill equipped to assure low costs. O. J. Abell. *Il* diag Iron Age 96:75 J1 8 '15

**Furnaces, Metallurgical—Continued**

- New system for burning powdered coal in metallurgical furnaces. C. F. Herington. *Il plans Eng N 73:1028-30 My 27 '15*
- Newnam hearth. W. E. Newnam. *Il Am Inst Min E Bul 100:828-30 O 16 '15; Same. Eng & Min J 100:828-30 O 16 '15; Excerpts. Met & Chem Eng 13:974 D 15 '15*
- Notes on the reverberatory furnace. F. R. Pyne. *Met & Chem Eng 13:292-3 My '15*
- Perkins gas-fired reverberatory furnace. plan Eng & Min J 100:190 J 31 '15
- Petroleum as fuel under boilers and in furnaces for heating, melting, and heat treatment of metals. W. N. Best. *Il diags Am Inst Min E Bul 104:1580-7 Ag '15; Excerpt. Met & Chem Eng 13:767 O 15 '15*
- Problems in burning powdered coal. A. S. Mann. *Il diags Gen Elec R 18:920-4, 959-65 S-O '15; Same. Iron Age 96:632-4 S 16 '15*
- Producer gas for heat treating. *Il diags Iron Tr R 57:531-3 S 16 '15*
- Protecting reverberatory walls at Douglas, Ariz. F. Rutherford. *Eng & Min J 100:843 N 20 '15*
- Rectangular mechanical furnaces. G. Vivian. *diags Eng & Min J 99:181-3 Ja 23 '15*
- Repairing metallurgical furnaces with air guns. *Met & Chem Eng 13:416 J 15 '15*
- Rissmann & Ruebel roasting furnace. *diag Eng & Min J 99:326 F 13 '15*
- Simple furnace for melting brass. R. F. Calvert. *Il Ry Age (Mech ed) 89:36 Ja '15*
- Standardizing air furnace practice. A. L. Pollard. *Foundry 43:412-13 O '15*
- Tests of natural gas-fired brass furnaces. F. L. Wolf and R. B. Burr. *diags Foundry 43:153-7 Ap '15*
- Thermal insulation of high-temperature equipment. P. A. Boeck. *diags Am Inst Min E Bul 104:1539-50 Ag '15; Excerpts. Iron Age 96:353-4 Ag 12 '15*
- Two die and shell hardening furnaces. *Il Iron Age 96:79 J 8 '15*
- Washed metal. H. D. Hibbard. *Il plan Am Inst Min E Bul 103:2387-94 D '15*
- Waste-heat boilers. O. Monnett. *diags Power 41:196-7 F 9 '15; Same. Eng & Min J 99:358-9 F 20 '15*
- Wifley rotary-hearth roaster. *Il Eng & Min J 99:414-15 F 27 '15*
- Wood-burning assay furnaces. *Met & Chem Eng 13:924-5 D 1 '15*
- Zinc smelters' roasting furnaces. *Eng & Min J 99:420 F 27 '15*
- See also Blast furnaces; Crucibles; Cupola furnaces; Electric furnaces; Metallurgy; Smelting*
- Furniture**
- Designs of built-in furniture. J. G. Dempsey. *Il Bldg Age 37:57-8 O '15*
- See also Cabinet making; Chairs; House decoration; Sewing cabinets*
- Furniture stores**
- Electrical service in furniture store of the Paine furniture company, Boston. *Il Elec W 65:874-5 Mr 13 '15*
- Fuses, Electric.** *See Electric fuses*
- Fusible plugs**
- Investigation of fusible tin boiler plugs. G. K. Burgess and P. D. Merica. *Il U S Bur Stand Tech Pa 53:1-37 '15; Same cond. J Ind & Eng Chem 7:324-9 O '15; Abstracts. Iron Age 95:1403-4 Je 24 '15; Am Gas Light J 103:29-30 J 12 '15; Am Soc M E J 37:554 N '15; Power 42:733-4 N 23 '15*
- Investigation of fusible tin boiler plugs. G. K. Burgess and P. D. Merica. *Metal Ind n s 13:321 Ag '15; Same. Elec W 66:303-4 Ag 7 '15; Same. Power 42:190-1 Ag 10 '15; Same. Met & Chem Eng 13:588 S 1 '15*
- Fusion, Latent heat of**
- Specific heat and heat of fusion of ice. H. C. Dickinson and N. S. Osborne. *diags U S Bur Stand Bul 12:49-81 O 23 '15; Abstracts. J Fr Inst 179:489-91 Ap '15; Power 41:565 Ap 27 '15; Am Soc M E J 37:294-5 My '15*

**G****Gages**

- Accurate tapered plug gages. J. Mahon. *diags Mach 21:320 D '14*
- Combined wheel and track gage. C. M. Feist. *diag Elec Ry J 46:238 Ag 7 '15*
- Condition gage for centrifugal pumps. G. M. Peek. *diag Eng N 72:1268 D 24 '14*
- Cylinder testing gage. H. E. McCray. *diag Mach 21:749 My '15*
- Devices for measuring the flow of sewage. E. Wright, Jr., and others. *Il diags Boston Soc C E J 1:439-54 O '14; Same. Eng & Contr 43:508-11 Je 9 '15*
- Equipment and methods in largest refrigeration system. C. H. Bromley. *Il diags Power 41:9-10 Ja 5 '15*
- External scale depth gage. E. Lea. *diag Mach 21:828 Je '15*
- Gages for measuring rail wear. A. R. Bailey. *Il Elec Ry J 46:1042 N 20 '15*
- Gaging shrapnel shells. *Il diags Mach 21:638-9 Ap '15*
- Limit gage for distance between an inside and an outside surface. *diags Mach 21:493 F '15*
- Limit gage for measuring recessed work. M. T. Byrne. *diags Mach 21:409 Ja '15*
- Setting of angle gages. W. S. Rowell. *Mach 21:743 My '15*
- Simple and efficient recording gage for weir measurements. *Il diags Eng N 73:829-31 Ap 29 '15*
- Simple and efficient recording gage for weir measurements. D. E. Adams and E. I. Roberts. *Il diags Eng N 73:1136-6 Je 10 '15*
- Taft-Peirce tool-room specialties. *Il Mach 21:835-6 Je '15*
- Thread tool gages. *diags Mach 21:784-5 Je '15*
- See also Draft gages; Micrometers; Pressure gages; Water gages*

**Galactan**

- Galactan determination. W. H. Dore. *J Ind & Eng Chem 7:721-2 Ag '15*

**Galactose pentacetate**

- Conversion of galactose pentacetate to an isomeric form. C. S. Hudson and H. O. Parker. *Am Chem Soc J 37:1589-91 Je '15*
- Existence of a third crystalline pentacetate of galactose. C. S. Hudson. *Am Chem Soc J 37:1591-3 Ja '15*

**Galleries, Art.** *See Art galleries***Galvanic batteries.** *See Electric batteries***Galvanizing**

- Corrosion of iron pans in zinc melting. *Eng & Min J 100:478 S 18 '15*
- Determination of rainfall rates. Pawtucket. R. I. G. A. Carpenter. *Il Eng N 74:148-9 J 12 '15*
- Determination of spelter coating on sheets and wire. J. A. Aupperle. *Metal Ind n s 13:329-30 Ag '15; Same. Iron Age 96:132 J 15 '15; Same (Maintaining galvanizing standards) Iron Tr R 56:1310-1 Je 24 '15*
- Galvanizing malleable castings. E. Touceda. *Foundry 42:470-1 D '14; Same. Iron Tr R 55:1137-8 D 17 '14*
- General electric practice in sherardizing. *Il diags Iron Age 96:1108-10 N 11 '15*
- Hot galvanizing. H. Chambers. *plan Engineer 120:160-2 Ag 13 '15*
- Practical side of sherardizing. C. L. Lucas. *Il Mach 21:861-4 Ja '15; Same. Sci Am S 79:212-13 Ap 3 '15*
- Protective coatings for iron and steel. E. P. Later. *Foundry 42:493; 43:35-1 D '14-Ja '15*
- Sherardizing; abstract. S. Trood. *Am Soc M E J 37:656 N '15*
- Testing spelter coating in France. C. Coulon. *Iron Tr R 57:401; Discussion. J. A. Aupperle. 57:401 Ag 26 '15*
- See also Electroplating*

**Galvanometers**

- Galvanometer mirrors; vacuum galvanometers; the most efficient combination of thermopile and galvanometer resistance. W. W. Coblentz. *pls U S Bur Stand Bul 11:177-82 N 15 '14*

*See also Electric measurement*

## Galveston, Texas

## Hurricane, 1915

- Builders of the causeway tell of the storm's effect. Eng Rec 72:276 Ag 28 '15  
 Curbing the sea at Galveston. H: M. Robert. Il Sci Am 113:368 S 25 '15  
 Effect of Galveston storm on seawall and causeway. R. P. Babbitt. Eng N 74:427 Ag 26 '15  
 Galveston adopts plan to strengthen its water-front defense against future storms. Il diag Eng Rec 72:576-7 N 6 '15  
 Galveston storm damage. Il Eng N 74:469-72 S 2 '15  
 Galveston survives hurricane. Il map Eng N 74:424-6 Ag 26 '15  
 Galveston's sea-wall checks hurricane's devastation. E. B. Van de Greyn. Il diags Eng Rec 72:371-5 Ag 28 '15  
 Gulf storms and the recent Galveston flood. E. L. Corthell. Eng N 74:758 O 14 '15  
 John B. Hawley confirms view that sea-wall saved Galveston. Eng Rec 72:270 Ag 28 '15  
 Metal roof coverings in Galveston hurricane. C: D. Puckett. Il Metal Work 84:336 S 10 '15  
 Meteorological analysis of storm indicates similarity to hurricane of 1900. map Eng Rec 72:275-6 Ag 28 '15  
 Rush work after storm restores Galveston's water supply and rail connections. E. B. Van De Greyn. Il Eng Rec 72:500-1 O 28 '15

## Water supply

- New well water supply of Galveston, Texas. H. G. Wheaton. Il Eng & Contr 44:385-6 N 17 '15

- Gamble, Francis Clarke, 1848-  
 President of the Canadian Soc. C. E. G. R. G. Conway. por Eng N 73:302-3 F 25 '15

## Game protection

- Forests and game preservation. O. H. Van Norden. Il Am For 21:111-16 F '15

## Gangrene

- Quinine in the treatment of gaseous gangrene. K. Taylor. Sci Am S 80:242-3 O 16 '15

## Gangways

- Emergency marine gangway. Il Sci Am 112: 410 My 1 '15

## Ganister

- Ganister-lined converters. J: Gregson. Iron Age 94:1292 D 3 '14

- Garage association, National. See National garage association

## Garages

- A. C. A. opens its new annex garage. Il plan Horseless Age 35:135-6 Ja 27 '15  
 Building garage over a creek. Automobile 33: 286-7 Ag 12 '15  
 Garage building built with a purpose. Il Horseless Age 36:295-6 S 15 '15  
 Garage built of concrete blocks. Il Bldg Age 37:39 Ap '15  
 Garage business—buildings, equipment, methods. P. M. Heidt. Il Horseless Age 36:394-5 O 15 '15  
 Garage of unique conception. Il Bldg Age 37: 25-6 O '15  
 Garage on estate of Edward C. Schaefer, Esq., New Rochelle, N. Y.; views and plan. Brick 24:190 Ag '15  
 Handling transients at the small garage. Horseless Age 35:858-60 Je 23 '15  
 Making courtesy work for you. Horseless Age 34:813-14 Ag 26 '14  
 Problem of handling the transient customer; how the garage men of Long Island are getting along with little live storage. F. H. Brown. Horseless Age 36:637-40 My 12 '15  
 Specializing on Ford cars. Horseless Age 35: 560c Ap 28 '15  
 Storage and handling of gasoline in the garage. H. T. Wade. Il Sci Am 112:12-13 Ja 2 '15  
 System in a New Hampshire garage. Il Horseless Age 35:633 My 12 '15  
 Up-to-date garage on the Santa Fe trail. Il Horseless Age 35:636 My 12 '15  
 Well planned plant and how it's run; Southern motors co., Louisville, Ky. Il Horseless Age 35:292-93 My 12 '15

- Where system pays in a modern garage—two branches of Royal garage in New York. Il Horseless Age 35:203-5 Ag 15 '15  
 See also Automobile service stations

## Accessories department

- Card records in selling accessories. Horseless Age 35:229-30 F 17 '15  
 Combining storage and accessory sales. Il Horseless Age 35:633-4 My 19 '15  
 Making the specialty demonstrate itself. M. E. Faber. Horseless Age 36:89 J1 21 '15  
 Merchandizing of automobile accessories. E. A. Cassidy. Horseless Age 35:857-8 Je 23 '15

## Accounting

- Apportionment of expense items. Horseless Age 35:367-8 Mr 17 '15

## Equipment

- Another electrical adjunct to the gasoline automobile. Il Elec W 60:981 O 30 '15  
 Garage alarm. diags Elec R & W Elec'n 66: 387-8 F 27 '15  
 New A. C. A. garage uses ramps. Il plan Automobile 32:328-9 F 18 '15  
 Outfit for truing valves. D. A. Hampson. diag Horseless Age 35:847 Je 23 '15

## Heating and ventilation

- Heating a garage. plan Metal Work 84:16-17 J1 2 '15  
 Heating and ventilating stables and garages. C: L. Hubbard. diags Dom Eng 72:168-70 Ag 7 '15  
 Heating system for a garage. plans Dom Eng 72:375 S 25 '15  
 Hot water heating system for garages. Il Dom Eng 72:228-9 Ag 21 '15

## Laws and regulations

- Amendments moderate stringent garage laws. Horseless Age 36:30-1 J1 7 '15  
 Boston's new garage laws now effective. Horseless Age 35:136-7 Ja 27 '15  
 Fight against garage regulations in New York state. Horseless Age 34:361-4 D 16 '14  
 Garage men protest against 50-foot rule in New York. Horseless Age 35:138-50 Ja 27 '15  
 Reasonableness of ordinance as to garages. Horseless Age 34:349 D 9 '14  
 Why is an oil separator? R. H. Johnston. diags Horseless Age 36:297-8 S 15 '15

## Garages, Electric

- Constant-potential charging system effects saving in Chicago garage. Il Elec W 65:865-6 Ap 3 '15  
 Electric commercial car garage in Chicago. Il Elec R & W Elec'n 67:713-14 O 16 '15  
 Electric vehicle operation—an actual service study. A. S. Wells. plan Elec R & W Elec'n 66:465-6+ Mr 6 '15  
 Electrical equipment of garages. N. G. Meade. Il diags Elec R & W Elec'n 66:53-4+ Ja 2 '15  
 New electric garage for charging on the constant-potential system. Il Elec R & W Elec'n 66:1111-12 D 5 '14  
 New York's co-operative electric garage. Il Elec R & W Elec'n 66:659-+ Ap 3 '15; Elec W 65:810 Mr 27 '15  
 Operating features of large electric-vehicle garage. Il diags Elec W 66:1145-7 N 20 '15

## Garages, Municipal

- Baltimore's municipal garage; itemized costs of operation and maintenance. W. T. Childs. Il Munic J 38:463-6 Ap 8 '15  
 Municipal garage at Cincinnati. K. C. Cardwell. Il Munic J 38:1-3 Ja 7 '15  
 Oakland municipal garage. Eng N 74:1033 N 25 '15

## Garages, Portable

- Automobile sheet metal work in western city. Il Metal Work 84:152-3 J1 30 '15

- Garbage. See Refuse and refuse disposal

- Garbage collection. See Refuse collection

## Garden cities

- Billerica garden suburb. A. C. Comey. Il plan Eng N 73:815 Ap 29 '15

## Gardening

- See also Electrohorticulture; Garden cities; Gardens

**Gardens**

Garden on an English estate; Woolley Hall. E. W. Gregory. *Il Brickb* 24:99-100 Ap '15  
Recent aspects of garden design. H. D. Eberlein. *Il Arch Rec* 37:300-19 Ap '15

**Gary, Indiana**

Trade school idea at Gary. *Il Bldg Age* 37:25-8 S '15

**Gas**

Effect of leaking illuminating gas on bituminous pavements. E. C. Jones. *Am Gas Light J* 102:25 Ja 11 '15  
Effect of leaking illuminating gas on bituminous pavements. G. C. Warren. *Eng & Contr* 42:405 O 28 '14; *Excerpts, Eng N* 73:441 Mr 4 '15  
Effects of gas light upon colored fabrics. *Am Gas Light J* 102:116 F 22 '15  
Gas as a case-hardening agent. A. H. White and E. T. Wood. *bibliog Il Am Gas Light J* 103:259-63, 266 O 25 '15  
How producer gas is used for drying molds and cores and for heating ladles in English foundries. *Il Foundry* 43:229-30 Je '15  
Maximum contents of hydrocarbons in producer gas; abstract. F. Hoffmann. *Am Soc M E J* 37:503 O '15  
Separation of the illuminants in mixed coal and water gas. G. A. Burrell and I. W. Robertson. *Am Gas Light J* 101:395+ N 9 '14; Same. *J Ind & Eng Chem* 7:17-21 Ja '15  
See also Acetylene; Blast furnace gas; Coal-tar products; Coke oven gas; Gas and oil engines; Gas lighting; Gas manufacture and works; Gas power plants; Gas producers; Gases; Petroleum

**Analysis****See Gas analysis****Cost**

Cost and price of gas in a small city. W. C. Butterworth. *Am Gas Light J* 102:180-3 Mr 22 '15

Is producer gas a competitor? J. Brandes. *Am Gas Light J* 103:42-3 Jl 19 '15

**Ignition**

Automatic and distance lighters for indoor lamps. C. W. Jordan. *diags Illum Eng Soc* 9:380-7 no 8 '14

Pilot flame ignition of incandescent gas lamps. C. W. Jordan. *diags Am Gas Light J* 103:214-15 O 4 '15

Report of committee on piping large buildings for gas; system of control. *diags Am Gas Inst Pro* 9:pt 2, 1424-30 '14

See also Automobile engines—Ignition devices; Gas and oil engines—Ignition

**Rates****See Gas rates****Standards**

Essentials of modern gas composition. W. Cranfield. *Am Gas Light J* 102:307-10 My 17 '15

Fixed calorific standard—a new use for coke. N. H. Humphrys. *Am Gas Light J* 102:73 F 1 '15

Formal order establishing 520 B. T. U. as Canadian standard. *Am Gas Light J* 103:164 S 13 '15

Gas testing ordinances: coming of calorimetry. J. Abady. *Il Am Gas Light J* 101:369-71 D 14 '14

Operating experiences under a calorific standard; symposium. *Am Gas Inst Pro* 9:pt 1, 387-78 '14

Standards for gas and electric service in Illinois. *Eng N* 72:1148-9 D 10 '14

Standards for gas service. U S Bur Stand Circ 32:1-190 '15

**Testing****See Gas testing****Gas, Natural**

Absorption of gasoline vapor in natural gas by fuming sulfuric acid. R. P. Anderson and C. J. Engelder. *J Ind & Eng Chem* 6:989-92 D '14

Analysis of natural gas and illuminating gas by fractional distillation at low temperatures and pressures. G. A. Burrell, F. M. Seibert

and I. W. Robertson. *diags U S Bur Mines Tech Pa* 104:1-38 '15; *Excerpts, Am Gas Light J* 103:315 N 15 '15; Same. *Met & Chem Eng* 13:851 N 15 '15

Blast lamp for natural gas. H. C. Chapin. *Il J Ind & Eng Chem* 7:46-7 Ja '15

Capillary concentration of gas and oil. C. W. Washburne. *Am Inst Min E Bul* 33:2365-78 S '14; Discussion. 100:831-46; 101:1203-4 Ap-My '15

Cementing a gas well in salt water. *diag Concrete Cem* 5:254 D '14

Composition of the natural gas used in twenty-five cities; with a discussion of the properties of natural gas. G. A. Burrell and G. G. Oberfell. *U S Bur Mines Tech Pa* 103:1-20 '15; *Excerpt (Rare gases in natural gas)*. *Sci Am S* 80:235 O 9 '15; *Excerpt (Physiological effect of natural gas)*. *Sci Am S* 80:303-4 N 6 '15

Condensation of gasoline from natural gas. G. A. Burrell, F. M. Seibert, and G. G. Oberfell. *diags plis U S Bur Mines Bul* 33:3-100 '15; *Excerpts, Automobile* 33:92 Jl 8 '15

Conditions of natural gas in the earth's strata. G. A. Burrell. *J Ind & Eng Chem* 7:322-4 Ap '15

Engineering problems arising in the transportation of natural gas. J. P. Fisher. *Am Soc M E J* 37:374-7 Jl '15

Gas and oil wells through coal seams; discussion. *Am Inst Min E Bul* 100:346-58 Ap '15

Gasoline engine run on natural gas. L. H. Morrison. *Power* 41:821 Je 15 '15

Gasoline from natural gas. F. E. Matthews. *Power* 42:677-8 N 16 '15

House heating with natural gas for fuel. F. R. Hutchinson. *Il Metal Work* 34:9-12+ Jl 2 '15

Natural gas industry in the Appalachian region. *Am Gas Light J* 103:150 S 6 '15

Natural gas production in 1914. *Am Gas Light J* 103:230 O 11 '15

New competitor of acetylene. J. F. Springer. *Mach* 21:302 Jl '15

Physical laws of methane gas. P. F. Walker. *Am Soc M E J* 37:176-9 Mr '15

Possible substitute for acetylene in welding and cutting; by-product of natural-gas gasoline. J. F. Springer. *Ry Age (Mech ed)* 89:529-30 O '15

Probable oil and gas in Montana. J. P. Rowe. *Eng & Min J* 99:647-9 Ap 10 '15

Regulation of oil and gas wells in California. L. H. Bddy. *Eng & Min J* 100:383-4 S 4 '15

Role and fate of the connate water in oil and gas sands. R. H. Johnson. *Am Inst Min E Bul* 98:221-6 F '15; Discussion. 101:1157-62; 103:1449-59; 105:2057-60 My, Jl, S '15

Separation of the constituents in a natural gas from which gasoline is condensed. G. A. Burrell and F. M. Seibert. *Am Chem Soc J* 37:392-6 F '15

Variation in composition of natural gas from different sands in the same field. G. A. Burrell and G. G. Oberfell. *J Ind & Eng Chem* 7:419 My '15

**Gas, Oil**

Improved Jones oil gas process at the Potrero gas works, San Francisco. E. C. Jones and L. B. Jones. *Il diag Am Gas Light J* 103:23, 26-7 Jl 12 '15

Time factor in making oil gas. M. C. Whitaker and C. M. Alexander. *diags J Ind & Eng Chem* 7:484-95 Je '15

**Bibliography**

Bibliography of the chemistry of gas manufacture. W. F. Rittman and M. C. Whitaker. *U S Bur Mines Tech Pa* 120:12-14 '15

**Gas, Water**

Automatic operation of a water gas set. C. F. Zeek. *diags Am Gas Light J* 102:395-6 Je 21 '15

Continuous production of water gas. *diags J Ind & Eng Chem* 7:541 Je '15

Examination of a condensate from carburetted water gas. E. T. Sterne. *J Ind & Eng Chem* 7:398-9 O '15; Same. *Am Gas Light J* 103:339 N 29 '15

**Gas, Water—Continued**

- Methods and facilities for specifying and testing blowers also measuring air and steam supply to the water gas generators. J. M. Spitzglass. *Am Gas Inst Pro* 9:pt 1, 615-66; Discussion. 9:pt 1, 668-77 '14
- Oil tar separation, recovery and disposal. R. El. Wyant. *Am Gas Inst Pro* 9:pt 1, 813-19; Discussion. 819-89 '14
- Physical constants of gas oils and derived tars. W. F. Rittman and G. Egloff. *J Ind & Eng Chem* 7:481-4 Je '15
- Possible economies from the use of exhaust steam in a water gas plant. S. A. Reinhard and C. A. Schnerr. *Il plan Am Gas Light J* 102:325-30 Ap '15
- Pure water gas production. *diag Am Gas Light J* 102:124-5 F 22 '15
- Timer for water gas generator. *Il Am Gas Light J* 102:155-6 Mr 8 '15
- Water gas machine results. *Am Gas Light J* 103:131-2 Ag 30 '15

**Bibliography**

- Bibliography of the chemistry of gas manufacture. W. F. Rittman and M. C. Whitaker. *U S Bur Mines Tech Pa* 120:3-11 '15

**Gas advertising. See Gas industry—Advertising****Gas analysis**

- Analysis of natural gas and illuminating gas by fractional distillation at low temperatures and pressures. G. A. Burrell, F. M. Seibert and I. W. Robertson. *diags U S Bur Mines Tech Pa* 104:1-38 '15; Excerpts. *Am Gas Light J* 103:815 N 15 '15; Same. *Met & Chem Eng* 13:851 N 15 '15
- Apparatus for the determination of sulfur in gas. E. R. Weaver and J. D. Edwards. *diag J Ind & Eng Chem* 7:820-1 JI '15; Same. *Am Gas Light J* 103:108 Ag 16 '15
- Determination of benzol in gas mixtures. G. A. Burrell and I. W. Robertson. *diag J Ind & Eng Chem* 7:669-70 Ag '15; Same. *Am Gas Light J* 103:132-3 Ag 30 '15
- Determination of gases dissolved in waters and effluents. A. A. Swanson and G. A. Eulett. *diags Am Chem Soc J* 37:2490-500 N '15
- Determination of hydrogen in gas mixtures by means of colloidal palladium. G. A. Burrell and G. G. Oberfell. *J Ind & Eng Chem* 6:992-4 D '14
- Determining the benzol in gas. A. Krieger. *diag Am Gas Light J* 103:890-300 My 10 '15
- Equilibrium between carbon oxysulfide, carbon monoxide and sulfur. G. N. Lewis and W. N. Lacey. *diag Am Chem Soc J* 37:1976-83 S '15
- Method for the determination of hydrogen sulphide in gas. A. B. Way. *Am Gas Inst Pro* 9:pt 1, 164-7 '14; Same cond. *Am Gas Light J* 101:364 D 7 '14; Discussion. *Am Gas Inst Pro* 9:pt 1, 167-78 '14
- Rapid method of fractionating gases at low temperatures. G. A. Burrell and I. W. Robertson. *J Ind & Eng Chem* 7:310-11 Mr '15
- Reagents for use in gas analysis; alkaline pyrogallol. R. P. Anderson. *diag J Ind & Eng Chem* 7:587-96 JI '15
- Report on the gas chemist's handbook. W. H. Fulweiler. *Am Gas Inst Pro* 9:pt 1, 141-54; Discussion. 9:pt 1, 154-63 '14
- Separation of gases by fractional distillation in a vacuum at low temperatures. G. A. Burrell and I. W. Robertson. *J Ind & Eng Chem* 7:209-10 Mr '15
- Separation of the illuminants in mixed coal and water gas. G. A. Burrell and I. W. Robertson. *diag Am Gas Inst Pro* 9:pt 1, 219-32 '14; Same cond. *Am Gas Light J* 101:295-4 N 9 '14; Same cond. *J Ind & Eng Chem* 7:17-21 Ja '15; Discussion. *Am Gas Inst Pro* 9:pt 1, 232-4 '14
- Specific absorption of reagents for gas analysis. R. P. Anderson. *J Ind & Eng Chem* 7:587 JI '15
- Gas and oil engines**
- Blackstone oil engine. *Il plan (supp) Engineer* 119:408-4 Ap 23 '15
- Charging of two-cycle internal combustion engines: abstract. B. Hopkinson. *diags Am Soc M E J* 37:126-7 F '15

- Convertible combustion engines. A. E. L. Chorlton. *diags Engineer* 119:201-3 F 26 '15; Same cond. *Power* 41:556-7 Ap 20 '15; Abstract. *Am Soc M E J* 37:239-41 Ap '15
- Distribution of heat in the cylinder of a gas engine. A. H. Gibson and W. J. Walker. *diags Engineer* 119:550-1 Je 4 '15; Same cond. *Power* 41:824-5 Je 15 '15; Abstract. *Am Soc M E J* 37:417-18 JI '15
- Dunn heavy oil engine. *Il Concrete Cem* 7:159-60 O '15
- Eight-cylinder gasoline engine for railway traction. H. G. Chatain. *Il Power* 41:214-15 F 9 '15
- Farm tractors and their motors. P. S. Rose. *Horseless Age* 35:799-800 Je 16 '15; Abstract. *Eng M* 49:750-2 Ag '15
- Forty years' advance in internal-combustion engines. *Il Power* 41:376-8 Mr 16 '15
- Gas blowing engines at the Steelton plant of the Pennsylvania steel company. *Il Met & Chem Eng* 13:516-19 Ag '15
- Gas blowing engines for the Pennsylvania steel co. *Il Iron Age* 96:12-14 JI 1 '15
- Gas blowing engines for the Pennsylvania steel co. *Il Iron Tr R* 57:33-5 JI 1 '15
- Gas-engine tendencies. A. E. Ward. *diags Power* 41:186-90 F 9 '15; Discussion. *J. P. Wentworth*. 41:283-4 Mr 16 '15
- Gas engines replace a steam turbine power plant. C. L. Follmer. *Il plan Power* 42:870-4 N 16 '15
- Handy gasoline engine formulas. W. F. Schnaphorst. *Iron Age* 96:414 Ag 19 '15
- Heater utilizing gas engine exhaust. *diag Iron Age* 96:413 Ag 18 '15; Same. *Metal Work* 84:317 S 3 '15
- Heavy-duty kerosene engine and generator. *Il diag Elec W* 68:548-9 S 4 '15
- Heavy oil engine, its present status and future development. A. H. Goldingham. *Il diags Am Soc M E J* 37:628-36 N '15; Excerpts. *Iron Age* 96:1313-15 D 2 '15
- History of the large gas engine. H. Hubert. *Iron Tr R* 56:1011-16+ My 20 '15
- History of the twelve-cylinder motor. E. W. Vulford. *Il Automobile* 32:500-1 Mr 18 '15
- Hot-bulb oil engine. E. Lundgren. *diags Power* 41:79-81 Ja 19 '15
- How to select your prime mover. G. Fisk. *Iron Tr R* 57:569-72+ S 23 '15
- Immediate gas engine business for gas companies. E. W. Edmund. *Il diag Am Gas Light J* 103:276-7 My 3 '15
- Installation of a gas engine. T. L. Hobbs. *Mach* 21:204-5 N '14; Same. *Sci Am S* 79:55 Ja 23 '15
- Internal-combustion engine dimensions. H. L. Watson. *Power* 41:672-4 My 18 '15
- Internal combustion engines from a commercial standpoint. J. G. Walthew. *Engineer* 118:539 D 4 '14
- Internal-combustion vs. the steam engine. *Power* 42:518-14 O 12 '15
- Investigation of a gas driven air compressor plant at the mine Consolidation. *Am Soc M E J* 37:112-13 F 15
- Junkers oil engine. F. El. Junge. *diags Eng M* 48:689-93 F '15
- Large blast furnace gas engines. H. Hubert. *Il diags Engineer* 119:511-14, 524-5 My 21-28 '15
- Latest Campbell oil engine. *Il Engineer* 119:44 Ja 8 '15
- Lauson heavy-duty kerosene engine. *diags Power* 41:116-17 Ja 26 '15
- Locomotive driven by suction producer gas; abstract. Gwosdz. *diags Am Soc M E J* 37:713-15 D '15
- Low grade fuel oil engine for general service. *diag Eng & Contr* 42:371 O 14 '14
- New type of internal combustion engine: abstract. H. F. Pullagar. *diags Am Soc M E J* 37:127-8 F '15
- Nordberg high compression oil engine. *Il Ry Age (Mech ed)* 89:487 S '15; Same. *Elec W* 66:374 Ag 14 '15; Same. *Iron Age* 96:141 JI 15 '15
- Oil engine for off-peak load. L. H. Morris. *Power* 41:351-2 Mr 9 '15
- Oil ploughing engine; plan. *Engineer* 120:36 JI 9 '15
- Operating an outlaw engine. F. W. Robinson. *diag Power* 42:625-6 N 2 '15



**Gas and oil engines—Continued**

- Panama-Pacific exposition. F. R. Low. *il* diags *Power* 42:261-6, 290-3, 341-2, 374-7 *Ag* 24-S 14 '15
- Parallel operation of alternating current generators driven by internal combustion engines; factors affecting engine design. H. C. Lehn. *Gen Elec* R 18:174-8 *Mr* '15
- Petrol rail coach engine. diags *Engineer* 119:426-7 *Ap* 30 '15
- Present status of prime movers. H. G. Stott, R. J. S. Pigott and W. S. Gorsuch. *Am Inst E E* *Pro* 33:952-75 *Je* '14; *Discussion*. 34:85-102 *Ja* '15
- Processes of combustion in a hot bulb engine; abstract. E. Weisshaar. *Am Soc M E J* 37:650-1 *N* '15
- Royal agricultural show at Nottingham. *il* diags *Engineer* 120:58-9 *Jl* 16 '15
- Service of a fuel oil engine in a railway pumping station. *il Ry Age* 58:144-5 *Je* 13 '15
- Small electric generating stations; applicability of oil engines for plants in small towns. G. C. Shaad. *il plan Elec* *W* 65:923-5 *Ap* 10 '15
- Small self-contained generating plant. *il Elec* *W* 66:421 *Ag* 21 '15
- Stop for gasoline engine. S. A. Standley. *plan Power* 40:854 *D* 15 '14
- Uto two-stroke cycle engine; abstract. P. Ostertag. *diag Am Soc M E J* 37:343-4 *Je* '15
- Venn-Severin two-stroke-cycle oil engine. *il Elec* *W* 66:939 *O* 23 '15
- When the gas engine will not start. E. N. Percy. *Power* 41:299-300 *Mr* 2 '15
- See also* Aeroplane motors; Automobile engines; Diesel engines; Gas producers; Gas tractors; Heat engines; Locomotives; Gas and oil

**Accidents**

- Gaseous explosions. D. Clerk. *Sci Am* S 79:288 *My* 1 '15
- Peculiar gas-engine accident. *il Power* 40:935; 41:203-4 *D* 29 '14, *F* 9 '15

**Cooling**

- Gas-engine cooling water. G. A. Field. *diag Power* 41:433 *Mr* 30 '15
- Injection of water in internal combustion engines. P. H. Berggreen. *Sibley J* 29:184 *Ja* '15
- Recovery of heat losses in internal combustion engines; abstract. J. B. Merriam. *diag Am Soc M E J* 37:295-6 *My* '15
- See also* Automobile engines—Cooling

**Cost of operation**

- Operating costs for oil-engine installations. *Elec* *W* 66:805-7 *O* 9 '15

**Fuel**

- Analysis and valuation of motor fuels—14 methods for examining them; from German data. *Automobile* 33:202-5, 247-9+ *Jl* 29-*Ag* 5 '15
- Combustion of benzole in internal combustion engines. E. Terres. *Am Soc M E J* 37:46-8 *Ja* '15
- Gas engine needle valve settings. B. R. Ware. *Int Marine Eng* 20:226-7 *My* '15
- Gas operated internal combustion engines; relative cost of operation compared with liquid fuel when used for power. H. W. Edmund. *Metal Work* 84:141-2 *Jl* 30 '15
- Initial temperatures of combustible gases and liquids; abstract. O. Binder. *Am Soc M E J* 37:554 *S* '15
- Liquid fuels for internal combustion engines. *Engineer* 119:408-9 *Ap* 23 '15

**Ignition**

- Effects of varying mixture and ignition timing. V. R. Gage. *Power* 42:720-2 *N* 23 '15
- Electric ignition devices for gas engines. *il Sci Am* S 78:357 *D* 5 '14

**Lubrication**

- Motor cylinder lubrication; abstract. G. S. Bryan. *Am Soc M E J* 37:293-4 *My* '15

**Manufacture**

- Allowances for gas engine piston fits: abstracts. E. W. Weaver. *Mach* 31:491 *F* '15; *Horseless Age* 35:110-11 *Ja* 20 '15; *Power* 41:245 *F* 16 '15
- How Stout institute students cast a gasoline engine. F. F. Hillix. *il Foundry* 43:99-102 *Mr* '15

**Testing**

- Operating and test data for a fuel-oil engine and generator. R. B. White. *il diag Elec* *W* 65:1688-9 *Je* 26 '15
- Test of a 18-hp. Petter oil engine. C. S. Salfeld. *Power* 41:405 *Mr* 23 '15
- Vertical tandem gas engine. *il diags Engineer* 120:208 *Ag* 27 '15

**Valves**

- Gas engine needle valve settings. B. R. Ware. *Int Marine Eng* 20:226-7 *My* '15

**Gas and oil engines, Marine**

- Common troubles with the marine gas engine and suggestions for determining and remedying. J. B. Sadler. *Int Marine Eng* 20:413-15 *S* '15
- Installation of 120 horsepower Bolinder oil engine in pilot schooner Gracie. S. *il plans Int Marine Eng* 20:158-60 *Ap* '15
- Largest commercial gasoline engine ever built. *il Sci Am* 112:558 *Je* 12 '15
- Marine oil engines for commercial work. *il Int Marine Eng* 20:495-7 *N* '15
- Oil and suction producer gas engines for ship propulsion; abstract. *Am Soc M E J* 37:602 *O* '15
- Present position of the marine distillate (paraffin) engine. C. J. Beiden. *Int Marine Eng* 20:225-6 *My* '15
- Thermodynamics of the marine oil engine. J. F. Wentworth. *Power* 41:145-8 *Ja* 26 '15

**Gas appliances**

- Domestic fuel appliances from the consumer's point of view. *Am Gas Light* J 102:70-1, 74-6 *F* 1 '15
- Industrial appliance business; with discussion. W. H. Bradley. *Am Gas Light* J 102:210-12 *Ap* 5 '15
- Industrial fuel development. S. T. Willson. *il Am Gas Light* J 103:82-4 *Ag* 9 '15
- Industrial gas appliance for the home, school and factory. G. L. Powers. *Am Gas Light* J 103:93 *Ag* 9 '15
- Industrial gas problems; general instructions—consumption on typical installations—candy making—coffee roasting—packing houses. F. S. Dewey. *Am Gas Light* J 102:391, 394-5 *Je* 21 '15
- Industrial showrooms of the Gas Light and coke company. Goswell Road, E. C. *il Am Gas Light* J 103:101 *Ag* 16 '15
- Industrial uses of gas at the Panama-Pacific international exposition. J. B. Redd. *Am Gas Light* J 103:156-7 *S* 8 '15
- Refrigeration by gas. H. M. Soper. *Am Gas Light* J 102:412-13 *Je* 28 '15
- Relations between gas companies and dealers. *Am Gas Light* J 103:6-7, 10-11 *Jl* 5 '15
- Report of committee on piping large buildings for gas; fuel illustrations. *Am Gas Inst Pro* 9:pt 2, 1440-86 '14
- Report of the committee on the utilization of gas appliances. *il diags Am Gas Inst Pro* 9:pt 2, 1511-41; *Discussion*. 1541-55 '14
- Typical industrial appliances. *il Am Gas Light* J 103:85-7, 90-3 *Ag* 9 '15
- What is being done by manufacturers of appliances to encourage the use of gas. S. Grady. *Am Gas Light* J 102:87 *F* 8 '15
- See also* Gas cooking

**Gas as fuel**

- Accident to a boiler fired with producer gas. *Am Soc M E J* 37:116 *F* '15
- Comparison of the economy of powdered coal, oil and water gas for heating furnaces. C. F. Herington. *Eng N* 72:1156-8 *D* 10 '14
- Design of surface combustion appliances. C. E. Lucke. *diags Sch Mines* Q 36:95-122, 233-45 *Ja*-*Ap* '15
- English continuous billet furnace. *il diags Iron Tr R* 57:841-2 *O* 23 '15
- English gas-fired melting furnaces. *diag Am Gas Light* J 102:140 *Mr* 1 '15

**Gas as fuel—Continued**

Fuel values of coal, gas and oil; operators of plants in Oklahoma compare costs on evaporation-unit basis. *Elec W* 65:1470 *Je* 5 '15

Gas and munitions of war. *Illum Engr* 8:364 *Ag* '15

Gas brazing furnace. *diag* *Ry Age* (Mech ed) 89:591-2 *N* '15

Gas fired boilers. *Herr Birkholz. Am Gas Light J* 103:99-101 *F* 15 '15

Gas furnace for heating soldering irons. *R. H. Parsons. plan Elec Ry J* 46:24 *Jl* 3 '15

Gas operated internal combustion engines; relative cost of operation compared with liquid fuel when used for power. *H. W. Edmund. Metal Work* 84:141-2 *Jl* 30 '15

Gas vs. electrically heated ovens. *G. H. Trout. Iron Tr R* 57:526+ *S* 16 '15

Heat treatment of iron and steel in a neutral atmosphere. *A. H. White and H. T. Hood. diag Am Gas Light J* 103:310-11, 314-15 *N* 15 '15

House heating with natural gas for fuel. *F. R. Hutchinson. II Metal Work* 84:9-12+ *Jl* 2 '15

Immediate gas engine business for gas companies. *H. W. Edmund. II diag Am Gas Light J* 103:275-7 *My* 3 '15

Industrial fuel. *F. W. Brueauff. Am Gas Light J* 103:267 *O* 25 '15

Industrial fuel development. *S. T. Willson. II Am Gas Light J* 103:82-4 *Ag* 9 '15

Industrial gas. *J. C. Shepard. II Am Gas Light J* 103:194-7 *Mr* 29 '15

Industrial gas problems. *F. S. Dewey. Am Gas Light J* 102:391, 394-5 *Je* 21 '15

Industrial uses of gas. *H. M. Thornton. II Am Gas Light J* 103:17-22 *Jl* 12 '15

Modern foundry pig-iron mixer; operating and chemical results with blast-furnace and coke-oven gases; abstract. *O. Simmersbach. Iron Age* 96:812-13 *O* 7 '15

New ingot heating furnace. *II diag Engineer* 120:162-4 *Ag* 13 '15

Power with by-product recovery. *T. R. Wolleston. Engineer* 119:326-7 *Ap* 2 '15; Same. *Sci Am S* 80:42-3 *Jl* 17 '15

Producer gas for heat treating. *II diag Iron Tr R* 57:521-3 *S* 16 '15

Report of industrial fuel committee, National commercial gas association. *H. O. Loebell. Am Gas Light J* 102:3-4 *Ja* 4 '15

Tests of natural gas-fired brass furnaces. *F. L. Wolf and R. B. Burr. diag Foundry* 48:153-7 *Ap* '15

Typical industrial appliances. *II Am Gas Light J* 103:85-7, 90-3 *Ag* 9 '15

*See also* Blast furnace gas; Coke oven gas; Coke ovens; Combustion, Surface; Gas; Gas burners; Gas cooking; Gas heating; Gas stoves

**Gas associations**

*See also* National commercial gas association

**Gas burners**

Burning blast furnace gas; Bradshaw-Huesener combustion arrangement. *diag Iron Age* 96:812-13 *Mr* 18 '15

Efficiency relation existing between various argand and open flame test burners. *F. H. Gilpin. diag Am Gas Inst Pro* 9:pt 1, 379-401; Discussion. 401-4 '14

Gas burners in 2750-hp. office-building boiler plant. *II diag Power* 42:79-80 *Jl* 20 '15

Gas lighting development. *T. Owens. II Am Gas Light J* 103:103-7 *S* 27 '15

Hot-blast stove gas burners. *II diag Iron Age* 96:356-7 *Ag* 12 '15

Simple, durable, electrically operated gas-valve. *Z. Ostenberg. II J Ind & Eng Chem* 7: 873 *O* '15; Same. *Am Gas Light J* 103:279 *N* 1 '15

Simple gas burner for small laboratory furnaces. *D. L. Randall. diag J Ind & Eng Chem* 7:873 *O* '15

Utilization of blast furnace gas. *A. N. Diehl. Iron Tr R* 57:946-8, 993-7, 1040-2+ *N* 11-25 '15; Abstract. *Iron Tr R* 57:853-6 *O* 28 '15; Abstract, with discussion. *Iron Age* 96:988-90 *O* 28 '15

*See also* Acetylene burners; Blast lamps

**Gas cleaning**

Gas from blast furnaces, its cleaning and utilization. *J. E. Johnson, Jr. diag Met & Chem Eng* 12:885-92, 760-9 *N-D* '14; Same. *Sci Am S* 79:93-5, 110-12, 126-7, 143-3 *F* 6-27 '15

Gas-washing apparatus with enclosed filter. *E. R. Weaver and J. D. Edwards. diag J Ind & Eng Chem* 7:534-5 *Je* '15

Recent developments in the Doherty washer cooler as a gas condenser. *R. B. Rowley. Am Gas Light J* 103:231+ *O* 11 '15

*See also* Gas purification

**Gas companies**

Continuous meter reading and discount system in Fond du Lac. *F. G. Maxwell. Am Gas Light J* 103:205 *Mr* 29 '15

Free maintenance of all gas lamps by the gas companies. *J. P. Conroy. Am Gas Light J* 102:119, 122-4 *F* 23 '15

House maintenance of gas lighting. *W. O. Weekes. Am Gas Light J* 103:203-5 *S* 27 '15

House maintenance service. *A. Hewitt. Am Gas Light J* 102:39, 42-3 *Ja* 18 '15

How can gas and electric companies under one management render the best light service? *A. B. Spaulding and N. H. Potter. Am Gas Light J* 103:218-19 *O* 4 '15

Is the sale of gas-electric fixtures by gas companies desirable? *R. F. Pierce. Am Gas Light J* 102:69-70 *F* 1 '15

Maintenance of house burners. *H. C. Crafts. Am Gas Light J* 102:247, 250-1 *Ap* 13 '15

Orders and complaints. *W. J. Clark. Am Gas Light J* 103:331-2 *N* 23 '15

Relations between gas companies and dealers. *Am Gas Light J* 103:6-7, 10-11 *Jl* 5 '15

Report of N. C. G. A. committee on outdoor gas lighting. *II Am Gas Light J* 102:117-19 *F* 23 '15

*See also* Gas industry; Gas lighting

**Accounting**

Accounting. *P. S. Young. Am Gas Light J* 103: 236 *O* 11 '15

Analyses of statements—units of cost. *A. P. Post. Am Gas Light J* 101:385-8 *D* 21 '14

Routine of billing and receiving department. *W. P. Baird. Am Gas Light J* 103:340-3, 346-7 *N* 29 '15

**Advertising**

*See* Gas industry—Advertising

**Employees**

Compensation of meter readers. *H. P. Schaper. Am Gas Inst Pro* 9:pt 2, 1683-7 '14; Same. *Am Gas Light J* 101:333 *N* 23 '14; Same. *Eng & Contr* 42:558-9 *D* 16 '14; Discussion. *Am Gas Inst Pro* 9:pt 2, 1687-1707 '14

Complaint man. *E. J. DeMarsh. Am Gas Light J* 102:401 *Je* 28 '15

How the shops can assist the commercial department in promoting friendly relations with the public. *H. E. Turner. Am Gas Light J* 102:350-1 *Je* 14 '15

Improvement of distribution employees. *C. E. Reinicker. II Am Gas Inst Pro* 9:pt 2, 1243-1302 '14; Same cond. *Am Gas Light J* 102: 33-9 *Ja* 18 '15; Discussion. *Am Gas Inst Pro* 9:pt 2, 1302-10 '14

National commercial gas association courses, and compulsory education. *L. Galloway. Am Gas Light J* 103:102-3; Discussion. 103: 103, 106-7 *Ag* 16 '15

**Public relations**

Address at the Minneapolis convention. *N. C. G. A. T. N. McCarter. Am Gas Light J* 102: 115-16 *F* 23 '15

Gas company from the consumer's point of view. *J. H. Ingwersen. Am Gas Light J* 102: 411-12 *Je* 28 '15

Relations with customers: discussion on the report of the N. C. G. A. committee. *Am Gas Light J* 102:149-51 *Mr* 8 '15

**Rates**

*See* Gas rates

**Regulation**

Northampton, Mass., rate case. *Am Gas Light J* 102:154-5 *Mr* 8 '15

Rented gas ranges. *Am Gas Light J* 102:326-7 *My* 24 '15

**Gas companies—Regulation—Continued**

Standards for gas service. U S Bur Stand Circ 32:1-190 '15

Summary of commission regulations governing gas supply; table. J. B. Klumpp. Am Gas Light J 103:76 Ag 2 '15

See also Gas—Standards

**Gas congress, International.** See International gas congress, San Francisco, 1915

**Gas cooking**

Domestic fuel appliances from the consumer's point of view. Am Gas Light J 103:70-1, 74-6 F 1 '15

Gas kitchen equipment of the Biltmore hotel. C. F. Herington. II plan Am Gas Light J 102:170-2 Mr 15 '15

How to secure all-gas kitchens in old houses. H. K. Dodson. Am Gas Light J 101:406-7 D 28 '14

**Gas distribution**

Astoria tunnel under the East river for gas distribution in New York city. J. V. Davies. II map Am Gas Light J 103:225-30, 244-7+ O 11-18 '15

Great gas tunnel under the East river. J. F. Springer. II Sci Am 113:380-1 O 30 '15

Installation and maintenance of services. R. B. Duncan. II diag Am Gas Inst Pro 9:pt 2, 1052-1161; Discussion. 1161-82 '14

Motor-driven, high-pressure gas pumping installation. J. S. Haug. Am Gas Light J 103:315-16 N 15 '15

Piping houses for gas lighting. H. R. Sterrett. Am Gas Light J 102:87, 90 F 8 '15; Same. Illum Eng Soc 10:298-302 no 4 '15

Present practice of gas distribution by British undertakings. W. Hole. II diag Am Gas Light J 103:305-9, 323-7 N 15-22 '15

Report of committee on distribution, Iowa district gas association. Am Gas Light J 102:403 Je 28 '15

Report of committee on piping large buildings for gas; piping plans. 4 fold charts Am Gas Inst Pro 9:pt 2, 1486a '14

Sizes of pipes for high pressure gas mains. J. M. Spitzglass. II diag Am Gas Light J 102:49-52 Ja 25 '15

Welding of high pressure mains. J. D. Shattuck. II diag Am Gas Inst Pro 9:pt 2, 945-1011 '14; Same abr. Am Gas Light J 102:54-5, 58-60, 66-9 Ja 25-F 1 '15; Discussion. Am Gas Inst Pro 9:pt 2, 1011-52 '14

See also Gas pipe lines; Gas pipes

**Gas-electric fixtures.** See Gas fixtures

**Gas electric locomotives.** See Electric locomotives

**Gas engineering**

Address before the Illinois gas association. L. H. Johnson. Am Gas Light J 102:193-4 Mr 29 '15

Suggested extension of the Dewey decimal system of classification to gas engineering. D. S. Knauss. Am Gas Inst Pro 9:pt 2, 1746-50; Discussion. 1750-7 '14

See also Gas distribution; Gas heating; Gas lighting; Gas power plants; Gas safety code

**Gas engineers, New England association of.** See New England association of gas engineers

**Gas engines.** See Gas and oil engines

**Gas explosions.** See Explosions

**Gas-filled lamps.** See Electric lamps, Tungsten

**Gas fitting**

Educating fitters. Am Gas Light J 103:100 Ag 16 '15

Physical installation of gas arcs. C. A. Luther. II Am Gas Inst Pro 9:pt 1, 876-91; Discussion. 892-902 '14

Proper specifications for and inspection of interior gas piping. A. B. Turner. Am Gas Inst Pro 9:pt 2, 1311-27 '14; Same (Standardizing gas piping specifications) Metal Work 82:764-7 D 11 '14; Discussion. Am Gas Inst Pro 9:pt 2, 1327-37 '14

See also Gas meters

**Gas fixtures**

Gas lighting development. T. Owens. II Am Gas Light J 103:192-7 S 27 '15

Is the sale of gas-electric fixtures by gas companies desirable? R. F. Pierce. Am Gas Light J 102:69-70 F 1 '15

Report of committee on piping large buildings for gas; fixture illustrations. Am Gas Inst Pro 9:pt 2, 1374-1423 '14

See also Gas lamps

**Gas flow**

Gas volume and dust concentration determination in connection with the Cottrell process. W. N. Drew. diag Am Soc M E J 37:676-8 D '15

German apparatus for measuring pressure and velocity of gases; abstract. E. Stach. diag Am Soc M E J 37:715-16 D '15

Note on the modified venturi formula for flow of gases or vapors. G. B. Upton. Sibley J 29:90-5 D '14

See also Gas measurement

**Gas heaters**

Fire-place heater design competition. II Am Gas Light J 103:124 Ag 23 '15

Gas heater for commutators. R. H. Parsons. diag Elec Ry J 46:280-1 Ag 14 '15

Heater utilizing gas engine exhaust. diag Iron Age 96:413 Ag 19 '15; Same. Metal Work 84:317 S 3 '15; Same cond. Ind Eng 15:89 S '15

Heating by means of gas burning appliances. G. S. Barrows. II Dom Eng 70:171-4, 201-3 F 6-13 '15; Same. Metal Work 83:765-8 My 28 '15

Report of N. C. G. A. committee on heating, ventilation and refrigeration. G. S. Barrows. Am Gas Light J 101:410-13 D 28 '14

See also Gas water heaters

**Gas heating**

How radiant heat from gas radiators is determined. plan Heat & Ven 12:24-6 My '15

Progress in gas heating science; with discussion. O. J. Kuenhold. Am Soc Heat & V E 20:299-319 '14

Report of N. C. G. A. committee on heating, ventilation and refrigeration. G. S. Barrows. Am Gas Light J 101:410-13 D 28 '14

Three methods of measuring radiant heat from gas fires. W. R. Twigg. II diag Heat & Ven 12:33-6 S '15

See also Gas heaters

**Gas holders.** See Gas holders

**Gas ignition.** See Gas—Ignition

**Gas industry**

Address to the National commercial gas association at Minneapolis. Am Gas Light J 101:353-5 D 7 '14

Address to the Pennsylvania gas association. L. R. Dutton. Am Gas Light J 102:273-5 My 3 '15

Address to the tenth annual meeting, Natural gas association of America. J. T. Lynn. Am Gas Light J 102:353-5 Je 7 '15

Aluminum in the gas industry. J Ind & Eng Chem 7:255-6 Mr '15

Domestic uses of gas. J. H. Gaylord. Am Gas Light J 102:298-9 My 10 '15

Gas industry and the war. N. H. Humphrys. Am Gas Light J 101:409-10 D 28 '14

Gas progress in the United States. R. C. Dawes. J Ind & Eng Chem 7:351-2 Ap '15

Present commercial gas situation in Texas. F. M. Lege, jr. Am Gas Light J 103:76-7 Ag 2 '15

Present practice in the sale of gas in the United Kingdom. F. W. Goodenough. Illum Engr 8:458-9 N '15

Report of industrial fuel committee, National commercial gas association. H. O. Loebell. Am Gas Light J 102:3-4 Ja 4 '15

Report of the committee on new business, Iowa district gas association. Am Gas Light J 103:133 Ag 30 '15

Report of the committee on piping large buildings for gas. II Am Gas Inst Pro 9:pt 2, 1338-1489; Discussion. 1490-1511 '14

Three ways of spending money to make money in the gas business. H. B. Maynard; H. C. Blackwell; G. W. Clabaugh. Am Gas Light J 103:34-5 J 19 '15

See also Gas appliances; Gas companies; Gas lighting; Gas power plants; Gas safety code

**Gas Industry—Continued****Advertising**

- Correcting misleading statements. *Am Gas Light J* 103:36-7 J1 19 '15  
 Direct advertising in the gas business. A. R. Fernald. *Am Gas Light J* 103:198-9+ Mr 29 '15  
 Report of committee on publicity, National commercial gas association. *Am Gas Light J* 101:380-1 D 14 '14  
 Value of window display. *Am Gas Light J* 103:52-4 J1 26 '15

**Exhibitions**

- Exposition awards. *Am Gas Light J* 103:109 Ag 18 '15  
 Gas show at Washington. *diags Am Gas Light J* 103:171-2 S 13 '15

**Statistics**

- Address to the Southern gas association. S. E. DeFrese. *Am Gas Light J* 102:385-7 Je 21 '15

**Gas lamps**

- Construction of the radio-X lamp. *Il Am Gas Light J* 103:118 Ag 23 '15  
 Gas and oil lamps and appurtenances; committee report. *Illum Eng Soc* 10:517-20 no 7 '15; Same. *Illum Engr* 8:409-11 O '15; Same. *Am Gas Light J* 103:273 N 1 '15  
 Gas lamps and appurtenances. *Illum Engr* 7:511-13 N '14  
 Gas street lighting development. F. R. Hutchinson. *Il Am Gas Light J* 102:356-8 Je 7 '15  
 New radio-X lamp. *Il Am Gas Light J* 103:60 J1 26 '15  
 Photometry of incandescent lamps. J. W. Roper. *diags Am Gas Light J* 102:178-9 Mr 22 '15  
 Physical installation of gas arcs. C. A. Luther. *Il Am Gas Inst Pro* 9:pt 1, 876-91; Discussion. 892-902 '14  
 Pilot flame ignition of incandescent gas lamps. C. W. Jordan. *diags Am Gas Light J* 103:214-15 O 4 '15

See also Gas fixtures; Gas lighting; Gas mantles

**Gas laws. See Gas—Standards****Gas lighting**

- Coal gas candle power. L. J. Willien. *Am Gas Light J* 102:219-20 Ap 5 '15; Same. *Metal Work* 83:537-8 Ap 9 '15  
 Converting night into day; what the inventor has done for oil, gas, and electricity in illumination. *Il Sci Am* 112:535-6 Je 5 '15  
 Domestic lighting. J. D. Shattuck. *Am Gas Light J* 103:250-1 O 18 '15  
 Examples of modern factory lighting by gas. *Il Illum Engr* 8:339-42 Ag '15  
 Factory lighting by high pressure gas. A. E. Broadberry. *Il Illum Engr* 8:199-202 My '15  
 Future of gas lighting. E. D. Brewer. *Am Gas Light J* 102:402 Je 28 '15  
 Gas lighting at the Panama-Pacific international exposition. C. B. Babcock. *Il Am Gas Light J* 102:234-5 Ap 12 '15  
 Good lighting gives prestige to the product. H. T. Owens. *Il Am Gas Light J* 102:209-10 Ap 5 '15  
 House maintenance of gas lighting. W. O. Weekes. *Am Gas Light J* 103:203-5 S 27 '15  
 House maintenance service. A. Hewitt. *Am Gas Light J* 102:39, 42-3 Ja 18 '15  
 Lighting week—a successful gas show—Jersey City, N. J. H. T. Owens. *Il Am Gas Light J* 103:252-3 O 18 '15  
 Office and store lighting by gas. T. Scofield and O. H. Fogg. *Am Gas Light J* 103:289-300 N 8 '15  
 Piping houses for gas lighting. H. R. Sterrett. *Am Gas Light J* 102:87, 90 F 8 '15; Same. *Illum Eng Soc* 10:290-302 no 4 '15  
 Popular talk on semi-indirect lighting. R. F. Pierce. *Il diags Am Gas Light J* 102:369-72 Je 14 '15  
 Recent advances in indoor gas lighting. C. W. Jordan. *Il diags Illum Eng Soc* 9:873-94 no 8 '14  
 Report of N. C. G. A. committee on indoor lighting. *Il Am Gas Light J* 102:32-7 F 8 '15  
 Report of N. C. G. A. committee on outdoor gas lighting. *Il Am Gas Light J* 102:117-19 F 22 '15

- Residence lighting with special reference to semi-indirect illumination. R. F. Pierce. *Am Gas Light J* 102:322-3 My 24 '15  
 Two up-to-date high-pressure gas installations. *Il Illum Engr* 7:574-5 D '14

See also Gas; Gas companies; Gas fixtures; Gas lamps; Gas mantles; Gas meters

**Cost**

- Comparative costs of gas and electricity for illuminating purposes. B. K. Cash. *Am Gas Light J* 103:167+ Mr 15 '15  
 Gas and electric street lights; comparison of cost and efficiency. *Il Munic Eng* 49:96-8 S '15  
 Holyoke gas and electricity. *Munic J* 38:258 F 25 '15  
 Report of committee on piping large buildings for gas; economical comparison of gas and electric lighting operating indoors. *Am Gas Inst Pro* 9:pt 2, 1431-9 '14

**Ignition**

See Gas—Ignition

**Gas lighting, incandescent**

- Developments in incandescent gas lighting; with discussion. R. F. Pierce. *Il Illum Eng Soc* 9:961-73 no 9 '14

**Gas lighting week**

- National gas lighting week, Sept. 27 to Oct. 2 1915. *Il Am Gas Light J* 103:145-8 S 6 '15

**Gas mantles**

- Chemistry of the incandescent gas mantle. H. S. Miner. *Met & Chem Eng* 13:50-2 Ja '15; Same. *Am Gas Light J* 102:65-6 F 1 '15; Same. *Sci Am* S 79:139 F 27 '15  
 Contributions of the chemist to the incandescent gas mantle industry. S. Mason. *J Ind & Eng Chem* 7:379-80 Ap '15  
 Evolution of the Welsbach mantle. *Sci Am* 112:535-6 Je 5 '15  
 Plant to manufacture 1,000 gas mantles daily. *Il Textile World* 49:360-1 Je '15  
 Recent advances in indoor gas lighting. C. W. Jordan. *Il diags Illum Eng Soc* 9:874-9 no 8 '14  
 Visit to some of the leading incandescent mantle works round London. *Il Illum Engr* 7:569-72 D '14

**Gas manufacture and works**

- Application of by-product coke ovens to the gas industry. J. D. Forrest. *Am Gas Light J* 102:186-9 Mr 22 '15  
 Carbonization in bulk—Koppers' ovens. C. J. Ramsburg. *Il diags Am Gas Inst Pro* 9:pt 1, 543-601; Discussion. 9:pt 1, 601-14 '14  
 Catalysis in the gas industry. *Sci Am* S 79:125 F 20 '15  
 Catalytic agents; their relation to modern methods. *Sci Am* S 80:53 J1 24 '15  
 Coal gas residuals—Feld process. F. H. Wagner. *diags Am Gas Inst Pro* 9:pt 1, 840-61 '14; Same cond. *Am Gas Light J* 101:305-9 N 16 '14; Same cond. *Met & Chem Eng* 12:896-702 N '14; Same cond. *Sci Am* S 80:316-19 N 13 '15; Discussion. *Am Gas Inst Pro* 9:pt 1, 361-7 '14  
 Coke in gas producers. *Iron Age* 96:464 Ag 26 '15; Same. *Am Gas Light J* 103:186 S 20 '15  
 Determination of Prussian blue in washer sludge and spent oxide. *Am Gas Light J* 103:151 S 6 '15  
 Experience with a by-product coke oven plant. C. C. Boardman. *Il Am Gas Light J* 102:289-94 My 10 '15  
 Gas from sawdust. *J Ind & Eng Chem* 7:542-3 Je '15  
 Gas manufacture from the point of view of physical chemistry. W. F. Rittman. *Am Gas Inst Pro* 9:pt 1, 288-300 '14; Same cond. *Am Gas Light J* 101:395-7 D 21 '14; Same cond. *J Ind & Eng Chem* 8:1027-30 D '14; Summary. *Met & Chem Eng* 12:678 N '14; Discussion. *Am Gas Inst Pro* 9:pt 1, 300-4 '14  
 Gas producers with by-product recovery. A. H. Lynn. *Il diags Am Soc M E J* 37:253-66 My '15  
 Ideal retort: electrical carbonization of coal. H. F. Boughton. *diags Am Gas Light J* 102:315-16 My 17 '15  
 Improved Jones oil gas process at the Potrero gas works, San Francisco. E. C. Jones and L. B. Jones. *Il diags Am Gas Light J* 103:23, 26-7 J1 12 '15

**Gas manufacture and works—Continued**

- Mode of decomposition of coal by heat. H. C. Porter and G. B. Taylor. *diags Am Gas Inst Pro* 9:pt 1, 284-83; Discussion. 9:pt 1, 283-8 '14
- New coal gas installation at Fall River. C. W. Hunter. *11 plan Am Gas Light J* 102:145-9 Mr 8 '15; Discussion (Carbonization in New England). 102:362-5 Je 7 '15
- New method of utilizing lignite coal tar; abstract. V. Schon. *Am Soc M E J* 37:403-4 JI '15
- Possible economies from the use of exhaust steam in a water gas plant. S. A. Reinhard and C. A. Schnerr. *11 plan Am Gas Light J* 103:225-30 Ap 12 '15
- Recovery of toluene from gas. *diags J Ind & Eng Chem* 7:438-9 My '15
- Report of the committee on progress in carbonization methods. *11 diags Am Gas Inst Pro* 9:pt 1, 450-53; Discussion. 9:pt 1, 539-43 '14
- Tall reinforced concrete coke house in Rotterdam. Holland. *11 Eng & Contr* 44:229-30 S 22 '15
- Time factor in making oil gas. M. C. Whitaker and C. M. Alexander. *diags J Ind & Eng Chem* 7:484-95 Je '15
- Up-keep of mechanical units in large gas plants. C. A. Jeffers. *Am Gas Light J* 103:211-12 O 4 '15
- Value of mechanical or other indicating and recording appliances in the operations of a gas plant. W. Philpot. *Am Gas Light J* 103:298-9 N 8 '15
- See also* Gas—Standards; Gas, Oil; Gas, Water; Gas companies; Gas power plants; Gas producers; Gas purification; Gas retorts; Gas testing; Gas holders

**Accidents**

- Hazards of gas works. J. B. Douglas. *Am Gas Light J* 103:327, 330 N 22 '15

**Bibliography**

- Bibliography of the chemistry of gas manufacture. W. F. Rittman and M. C. Whitaker. *U S Bur Mines Tech Pa* 120:1-21 '15

**Safety devices and measures**

- Report of committee on accident prevention. *Am Gas Inst Pro* 9:pt 1, 82-110; Discussion. 9:pt 1, 111-20 '14

***See also* Gas safety code**

- Gas manufacture and works, Municipal**  
Kalamazoo situation. W. Newbigging. *Am Gas Light J* 103:38-9 JI 19 '15
- Municipal gas plant of St. Petersburg, Florida. *11 Munic Eng* 48:240-1 Ap '15
- St. Petersburg, Florida, gas plant. *11 Am Gas Light J* 102:241-2 Ap 19 '15

**Gas measurement**

- Measurement of gas in large volumes. J. F. Wing. *diag Am Gas Light J* 102:4-7+ Ja 4 '15

- Measuring gas weights. T. E. Butterfield. *Am Soc M E J* 37:443-5 Ag '15

- Measuring the gas supplied to Panama-Pacific exposition. *11 Am Gas Light J* 103:258 O 25 '15

- Report of the committee on measurement of gas in large volumes. *diag Am Gas Inst Pro* 9:pt 1, 677-704; Discussion. 9:pt 1, 705-20 '14

***See also* Gas flow; Gas meters; Manometers****Gas meters**

- 1877 instructions for reading meters. *Am Gas Light J* 103:173 S 13 '15

- Installation repairing and testing of meters by a small company. C. Otten, jr. *11 Am Gas Inst Pro* 9:pt 2, 1184-1205; Discussion. 9:pt 2, 1205-42 '14

- Measurements for the household. *11 U S Bur Stand Circ* 55:91-101 '15

- Prepayment meter in the South. M. A. Bowman. *Am Gas Light J* 103:11-13 JI 5 '15

**Gas pipe lines**

- Engineering problems arising in the transportation of natural gas. J. P. Fisher. *Am Soc M E J* 37:374-7 JI '15

**Gas pipes**

- Gas piping practice in eastern city. H. R. Sterrett. *Metal Work* 83:347-8 Mr 5 '15

- Installation and maintenance of services. R. B. Duncan. *11 diags Am Gas Inst Pro* 9:pt 2, 1052-1161; Discussion. 9:pt 2, 1161-82 '14
- Lead wool as jointing material; abstracts. C. E. Reincker. *11 Am Gas Light J* 102:242-6 Ap 19 '15; *Eng & Contr* 43:520-2 Je 9 '15
- Moving a 30-in. gas main. R. J. Van Wagner. *11 Eng N* 74:1082 D 2 '15
- Oxy-acetylene welding eliminates joints in gas mains; with cost figures. *11 Eng Rec* 71:182 F 6 '15
- Present practice of gas distribution by British undertakings. W. Hole. *11 diags Am Gas Light J* 103:305-9, 326 N 15-22 '15
- Proper specifications for and inspection of interior gas piping. A. E. Turner. *Am Gas Inst Pro* 9:pt 2, 1311-26 '14; Same (Standardizing gas piping specifications). *Metal Work* 82:764-7 D 11 '14; Discussion. *Am Gas Inst Pro* 9:pt 2, 1327-37 '14
- Report of committee on distribution, Iowa district gas association. *Am Gas Light J* 102:403 Je 28 '15
- Sizes and equivalent length of services. J. M. Spitzglass. *Am Gas Light J* 103:337-9 N 29 '15
- Sizes of pipes for high pressure gas mains. J. M. Spitzglass. *11 diags Am Gas Light J* 102:49-52 Ja 25 '15
- Welding of high pressure mains. J. D. Shattuck. *11 diags Am Gas Inst Pro* 9:pt 2, 945-1011 '14; Same abr. *Am Gas Light J* 102:54-5, 58-60, 66-9 Ja 25-F 1 '15; Discussion. *Am Gas Inst Pro* 9:pt 2, 1011-52 '14
- Welding the joints of steel gas mains. *11 Eng N* 73:233-4 F 4 '15

***See also* Gas distribution; Gas pipe lines****Gas plants. *See* Gas manufacture and works****Gas power plants**

- British producer-gas and ammonia-recovery plant. *diags Met & Chem Eng* 13:456-8 JI '15
- Gas engines replace a steam turbine power plant. C. L. Follmer. *11 plan Power* 42:670-4 N 16 '15
- Gas-power plant of the Illinois glass co. at Alton. T. Wilson. *11 plan Power* 42:252-6 Ag 24 '15
- Gas producers and concentration of power at mines. R. H. Fernald. *Colliery* 35:415-17 Mr '15
- Gas producers with by-product recovery. A. H. Lyman. *11 diags Am Soc M E J* 37:253-66 My '15
- Investigation of the gas-producer power-plants in New York city and vicinity. C. M. Ripley. *Am Soc M E J* 37:688-9; Discussion. 37:688-91 D '15; Abstract. *Power* 42:808-9 D 7 '15
- Modern gas-power blower stations. A. West. *11 diags Am Inst Min E Bul* 102:1205-13 Je '15; Abstract. *Am Soc M E J* 37:413 JI '15
- Test of 200-hp. gas-producer plant. F. V. Larkin. *Power* 41:6-7 Ja 5 '15

***See also* Blast furnace gas; Coke oven gas; Gas and oil engines; Gas producers****Gas producers**

- British producer-gas and ammonia-recovery plant. *diags Met & Chem Eng* 13:456-8 JI '15
- Gas producers and concentration of power at mines. R. H. Fernald. *Colliery* 35:415-17 Mr '15
- Gas producers with by-product recovery. A. H. Lyman. *11 diags Am Soc M E J* 37:253-66 My '15
- Gasification of rough lignite; abstract. R. Klostermann. *Am Soc M E J* 37:182 Mr '15
- Important advance in gas producer efficiency. *11 Met & Chem Eng* 13:399-400 Je '15
- Investigation of the gas-producer power-plants in New York city and vicinity. C. M. Ripley. *Am Soc M E J* 37:688-9; Discussion. 37:688-91 D '15; Abstract. *Power* 42:808-9 D 7 '15
- Morgan producer gas machine. *11 Iron Age* 95:1161-3 My 27 '15; *Iron Tr R* 57:180-3 JI 22 '15
- Power with by-product recovery. T. R. Wollaston. *Engineer* 119:328-7 Ap 2 '15; Same. *Sci Am S* 80:42-3 JI 17 '15
- Progress in gas producer efficiency. *11 Eng M* 49:supl-2 Je '15
- Sub-bituminous coal and sawmill waste in producer plant. G. S. Willson. *11 Power* 42:442-3 S 28 '15

**Gas producers—Continued**

Test of 300-hp. gas-producer plant. F. V. Larkin. *Power* 41:6-7 Ja 5 '15

**Gas pumps.** See **Pumps, Gas**

**Gas purification**

Different kinds of oxide. *Am Gas Light J* 103:133 Ag 30 '15

Electrical process for detarring gas. F. W. Steere. *Il diag Met & Chem Eng* 12:775-8 D '14; Same. *Am Gas Inst Pro* 9:pt 1, 178-89 '14; Same cond. *Eng N* 72:1007 N '14; Same cond. *Eng M* 48:786-9 F '15; Discussion. *Am Gas Inst Pro* 9:pt 1, 189-99 '14

Filtering producer gas. C. A. Tupper. *Iron Age* 95:455-6 F 25 '15

Fractional collection of crude tar. G. T. Purves. *diags Am Gas Light J* 102:387-90 Je 21 '15

Gas purification with carbonate of potash. *Am Gas Light J* 103:317 N 15 '15

Purifier installations. C. E. Paige. *Il Am Gas Inst Pro* 9:pt 1, 721-50; Discussion. 9:pt 1, 750-62 '14

Purifying producer gas; the use of hydrated iron oxide for the removal of sulphur. A. J. Wallace. *Iron Age* 95:896-7 Ap 22 '15

Removal of carbon bisulphide from coal-gas. E. V. Evans. *diag Met & Chem Eng* 13:239-40 Ap '15

See also **Gas cleaning**

**Gas ranges.** See **Gas stoves**

**Gas rates**

Cost and price of gas in a small city. W. C. Butterworth. *Am Gas Light J* 102:180-3 Mr 22 '15

Des Moines gas company case. *Elec R & W Elec'n* 67:329-30 Ag 21 '15

Gas rates. J. H. Maxon. *Am Gas Light J* 102:203-4 Mr 29 '15

Industrial rate based on maximum demand. *Am Gas Light J* 102:283 My 3 '15

Kalamazoo situation. W. Newbidding. *Am Gas Light J* 103:38-9 Jl 19 '15

Logical gas rates. A. S. Ives. *Am Gas Light J* 103:22 Jl 12 '15

National commercial gas association report of committee on differential rates. F. W. Frueauff. *Am Gas Light J* 102:18-23+ Ja 11 '15

Northampton, Mass., rate case. *Am Gas Light J* 102:154-5 Mr 8 '15

Report of committee on rates. *Am Gas Inst Pro* 9:pt 2, 1758-60; Discussion. 9:pt 2, 1760-81 '14

Southwestern electrical and gas association 11th annual convention. *Am Gas Light J* 102:378-9 Je 14 '15

Specific examples of the benefits from scientific rates. H. L. Coleman. *Am Gas Light J* 101:363-4 D 7 '14

**Gas retorts**

Ideal retort: electrical carbonization of coal. H. F. Boughton. *diags Am Gas Light J* 102:315-16 My 17 '15

Inclined retorts. R. B. Richardson. *Il diag Am Gas Light J* 102:306-7 My 17 '15

Operation of inclined retorts. F. Huber. *Il Am Gas Inst Pro* 9:pt 1, 406-33 '14; Same cond. *Am Gas Light J* 102:102-3, 106-8 F 15 '15; Discussion. *Am Gas Inst Pro* 9:pt 1, 433-50 '14

Report of the committee on progress in carbonization methods. *Il diags Am Gas Inst Pro* 9:pt 1, 450-539; Discussion. 9:pt 1, 539-43 '14

See also **Gas manufacture and works**

**Gas safety code**

Gas safety code of the Bureau of standards. R. S. McBride. *Am Gas Light J* 103:44-5 Jl 19 '15

**Gas sampling**

Flue-gas collector. C. H. Bean. *diag Power* 42:763 N 30 '15

Flue-gas collector. F. W. Fischer. *diag Power* 42:489-90 O 5 '15

Sampling for average gas. *Am Gas Light J* 102:317 My 17 '15

**Gas stoves**

Gas range efficiencies. *Am Gas Light J* 102:289 Ap 26 '15

Gas range week. *Il Am Gas Light J* 102:257-62 Ap 26 '15

Rented gas ranges. *Am Gas Light J* 102:326-7 My 24 '15

Standardization of gas appliance specifications. *Am Gas Light J* 102:140-1 Mr 1 '15

What policy is being adopted by gas companies to meet electric stove competition? V. S. McIntyre. *Am Gas Light J* 103:220 O 4 '15

**Gas testing**

British thermal unit losses on medium pressure line. W. O. Brewer. *Am Gas Light J* 102:220-1 Ap 5 '15; Discussion. 102:327, 330-1 My 24 '15

Coal gas candle power. L. J. Willien. *Am Gas Light J* 102:219-20 Ap 5 '15; Same. *Metal Work* 83:537-8 Ap 9 '15

Composition of gas in relation to the performance of the bunsen burner. R. F. Pierce. *Am Gas Light J* 103:1-5 Jl 5 '15

Efficiency relation existing between various Argand and open flame test burners. F. H. Gilpin. *diags Am Gas Inst Pro* 9:pt 1, 379-401; Discussion. 9:pt 1, 401-4 '14

Gas testing ordinances: coming of calorimetry. J. Abady. *Il Am Gas Light J* 101:369-71 D 14 '14

Instruments for testing gas. M. L. Hamlin. *diags J Ind & Eng Chem* 6:1032-3 D '14

Lead acetate test for hydrogen sulphide in gas. R. S. McBride and J. D. Edwards. *diags pla U S Bur Stand Tech Pa* 41:1-46 '14; Abstract. *J Fr Inst* 178:639-42 N '14; Abstract. *Met & Chem Eng* 13:62 Ja '15

London gas referees' regulations for determining calorific power. *diag Am Gas Light J* 102:313-15 Ap 5 '15

Standards for gas service. *U S Bur Stand Circ* 32:1-190 '15

Tests of a new recording calorimeter. C. H. Stone and W. H. Hinman. *Am Gas Inst Pro* 9:pt 1, 200-10 '14; Same. *Am Gas Light J* 101:387-90 D 21 '14; Discussion. *Am Gas Inst Pro* 9:pt 1, 210-17 '14

See also **Gas sampling**

**Gas tractors**

Gas-tractor power plant. C. V. Hull. *Il plan Power* 41:226-8 F 16 '15

**Gas turbines**

Discussion of the question of the gas turbine; abstract. A. Walter. *diag Am Soc M E J* 37:803-4 O '15

Gas turbine. S. F. Walker. *Colliery* 36:26-8 Ag '15

Gas turbines brought to practical efficiency. C. A. Tupper. *Iron Age* 96:185 Jl 22 '15; Same. *Sci Am* 80:210 O 2 '15

Internal combustion turbine. *Il Am Gas Light J* 102:324-5 My 24 '15

**Gas washing.** See **Gas cleaning**

**Gas water heaters**

Hotstream water heater. *Il Dom Eng* 72:271 Ag 28 '15

Water heating by gas. C. E. Bartlett. *Am Gas Light J* 102:310-11, 314-15 My 17 '15

What some makers of water heaters are offering the gas company. *Il Am Gas Light J* 102:337-43, 346-8 My 31 '15

**Gas wells.** See **Gas, Natural**

**Gases**

Chemical reactions at low pressures. I. Langmuir. *Am Chem Soc J* 37:1139-67 My '15; Abstract. *J Ind & Eng Chem* 7:349-51 Ap '15; Abstract. *Met & Chem Eng* 13:244-6 Ap '15

Hydrogen and the rare gases. J. Dewar. *Sci Am* 87:191 Mr 30 '15

Method for calculating that part of the recoil momentum of a gun which is due to the action of the gases after the projectile leaves the muzzle. W. S. Franklin. *J Fr Inst* 179:559-77 My '15

Physical laws of methane gas. P. F. Walker. *Am Soc M E J* 37:176-9 Mr '15

Vapor pressure of ethane and ethylene at temperatures below their normal boiling points. G. A. Burrell and I. W. Robertson. *diags Am Chem Soc J* 37:1893-1902 Ag '15

See also **Air**; **Blast furnace gas**; **Coke oven gas**; **Firedamp**; **Flue gas**; **Gas**; **Gas and oil engines**; **Hydrogen**; **Inflammable mixtures**; **Ionization**; **Mine gases**; **Nitrogen**; **Oxygen**; **Ozone**; **Sewer gas**

**Analysis**

See **Gas analysis**

- Gases, Asphyxiating**  
Combating poisonous gases; abstracts. P. Pascal. *diag Eng M* 50:114-16 O '15; *Engineer* 119:598 Jc 13 '15  
Dispersing asphyxiating gases. *II Sci Am* 113: 93 J1 31 '15  
Modern munitions of war. V. Lewes. *Engineer* 120:82-3 J1 22 '15  
Poisonous gases and incendiary bombs. Ry R 57:375-8 S 13 '15  
Poisonous gases in warfare. W. A. Tilden. *Eng M* 49:739 Ag '15  
Use of poisonous gases in warfare. J. B. C. Kershaw. *II Sci Am* 113:595+ Jc 12 '15
- Gases, Kinetic theory of**  
Kinetic theory of gases. S. Dushman. *Gen Elec R* 18:952-3, 1042-3, 1159-68 O-D '15
- Gasholders**  
Care and maintenance of gas holders. J. H. Braine. *II Am Gas Inst Pro* 9:pt 1, 752-840 '14; Same cond. *Am Gas Light J* 101:855-9+, 872-5, 878-80 D 7-14 '14; *Discussion. Am Gas Inst Pro* 9:pt 1, 840-75 '14  
Concrete pile holder foundation at Lynn. F. E. Drake. *II diag Am Gas Light J* 102:163-6 Mr 15 '15; *Discussion. 102:235-7 Ap 12 '15*  
Gasholder without a water tank. *diag J Ind & Eng Chem* 7:802 S '15  
Novel design in gas holders. *J Fr Inst* 130:636 N '15
- Gasol. See Acetylene, Substitutes for**
- Gasoline**  
Absorption of gasoline vapor in natural gas by fuming sulfuric acid. R. F. Anderson and C. J. Engelder. *J Ind & Eng Chem* 6:389-92 D '14  
Analysis and valuation of motor fuels—14 methods for examining their quality. from German data. *Automobile* 33:202-5, 247-9+ J1 29-Ag 5 '15  
Burton process of cracking to make gasoline. C. H. Claudy. *II Sci Am* 112:5+ Ja 2 '15  
Camphor in gasoline improves its quality. E. M. Keating. *Inland Ptr* 56:383-4 D '15  
Cars, oil production and the price of gasoline. *II Horseless Age* 36:265-7 S 15 '15  
Chemist as a trustbuster. *Sci Am* 112:284 Mr 27 '15  
Condensation of gasoline from natural gas. G. A. Burrell, F. M. Seibert and G. G. Oberfell. *diag pls U S Bur Mines Bul* 88:3-100 '15; *Excerpts. Automobile* 33:92 J1 8 '15  
Determination of gasoline vapor in air. G. A. Burrell and J. W. Robertson. *diag J Ind & Eng Chem* 7:112-13 N '15  
Dr. Rittman's gasoline process. *Sci Am* 112: 248 Mr 13 '15; Same. *Horseless Age* 35:285+ Mr 3 '15  
Experiments show action of mixtures of air and gasoline vapor. H. S. Webb. *Automobile* 32:510-11 Mr 13 '15  
Gasoline from natural gas. F. E. Matthews. *Power* 42:677-8 N 16 '15  
Gasoline from synthetic crude oil. W. O. Snelling. *Am Inst Min E Bul* 100:695-704 Ap '15; Same. *Sci Am S* 79:189-91 Mr 20 '15; Same cond. *Sci Am* 112:266-7 Mr 20 '15; *Abstract. Met & Chem Eng* 13:180-1 Mr '15; *Discussion. Am Inst Min E Bul* 101:1162-9 My '15  
Gasoline from synthetic oil. W. O. Snelling. *Eng & Min J* 99:379 F 20 '15; Same. *Am Gas Light J* 102:156 Mr 3 '15  
Handling gasoline. *Munic J* 39:315-16 Ag 26 '15  
Improvement of high boiling petroleum oils, and the manufacture of gasoline as a by-product therefrom, by the action of aluminum chloride. A. M. McAfee. *J Ind & Eng Chem* 7:787-41 S '15; Same. *Met & Chem Eng* 13:582-7 S 15 '15; Same abr. *Am Gas Light J* 103:293-5+ N 8 '15; *Abstract. Eng N* 74:532 S 16 '15  
Increased gasoline yield and toluol from petroleum. *Am Gas Light J* 102:156-7 Mr 8 '15  
Inflammability of mixtures of gasoline vapor and air. G. A. Burrell and H. T. Boyd. *diag U S Bur Mines Tech Pa* 115:1-16 '15; Same cond. *J Ind & Eng Chem* 7:414-17 My '15; *Summary. Met & Chem Eng* 13:502 N 1 '15  
Innovations in petroleum technology. *Eng M* 49:111-12 Ap '15  
Manufacture of gasoline by cracking heavy oils. *Sci Am S* 79:283 My 1 '15  
Motor fuels; situation in England, and on the continent. V. B. Lewes. *Am Gas Light J* 103:165-7, 170-1, 178-81 S 13-20 '15  
Preparation of gasoline and kerosene from heavier hydrocarbons. B. T. Brooks and others. *diag J Ind & Eng Chem* 7:180-5 Mr '15  
Rittman process of cracking. C. H. Claudy. *II Sci Am* 112:267 Mr 20 '15  
Rittman processes. *Horseless Age* 36:368 O 15 '15  
Rittman vaporizes petroleum in still. *diag Automobile* 32:555 Mr 25 '15  
Statistical review of the question of gasoline supply. B. T. Brooks. *J Ind & Eng Chem* 7:176-9 Mr '15  
Storage and handling of gasoline in the garage. H. T. Wade. *II Sci Am* 112:12-13 Ja 2 '15  
Thermal reactions of petroleum hydrocarbons in the vapor phase. W. F. Rittman. *J Ind & Eng Chem* 7:945-53 N '15  
Two new fuel processes discovered. *Automobile* 32:427 Mr 4 '15  
Weight of a gallon of gasoline. *Automobile* 33:200 J1 29 '15
- Storage**  
*See Oil storage*
- Gasoline, Substitutes for**  
Abandon manufacture of new fuel xoline. *Horseless Age* 34:327 D 30 '14  
Natalite a gasoline substitute. *Automobile* 32:1094 Jc 17 '15
- Gasoline engines. See Gas and oil engines**
- Gasoline in sewers**  
Apparatus for testing sewer atmosphere for explosive gases. H. J. Kellogg. *diag Eng & Contr* 42:273 S 16 '14  
Inflammable wastes in sewers. N. S. Sprague. *diag Munic Eng* 47:338-43 N '14; Same. *Eng & Contr* 42:476-8 N 18 '14; *Excerpt. Eng Rec* 70:442-3 O 17 '14  
Investigation of sewer air following Boston explosion. H. W. Clark. *Eng Rec* 70:806-7 D 5 '14  
Quantity of gasoline necessary to produce explosive mixtures in sewers. G. A. Burrell and H. T. Boyd. *diag J Ind & Eng Chem* 7:750-4 S '15; *Abstract. Eng N* 74:955 N 11 '15
- Gasoline shovels. See Shoveling machines**
- Gasoline tractor. See Tractors**
- Gate posts**  
Gate and posts, Baldwin-Lyman house, Salem, Mass., built in 1808; measured and drawn by G. Robb. *Brickb* 24:pl 10 N '15
- Gates**  
Concrete headgate, south San Joaquin and Oakdale irrigation district in California. F. C. Scooby. *diag Eng & Contr* 43:393 Ap 28 '15  
Mitering lock gate at Keokuk presents novel features. B. H. Parsons. *II diag Eng Rec* 72:344-9 S 18 '15  
New type of gate for regulating adjacent water levels operates automatically. *diag Eng Rec* 71:304-5 Mr 6 '15  
Repairs to the gates at the 70-foot entrance to the Tyne docks. *II Engineer* 120:412, 418 O 29 '15  
Wicket gates the logical development for hydraulic turbine regulation. L. F. Moody. *diag Eng Rec* 72:358-60 S 18 '15  
*See also Floodgates*
- Gateways**  
Construction of a covered gateway. *diag Bldg Age* 37:63-4 D '15  
Design for attractive entrance gateway. *II Bldg Age* 37:61-2 My '15  
Dudley memorial gate, Harvard university; views. *Brickb* 24:255-6 O '15
- Gatun dam**  
Credit for the Gatun dam. *Sci Am* 112:356 Ap 17 '15  
Gatun dam; paper presented at meeting of Am. Soc. C. E., May 18, 1904. C. D. Ward. *Sci Am S* 79:347 Ap 17 '15

**gear cutting**

- Automatic bevel gear generator. *Il Iron Age* 96:748-50 S 30 '15  
 Bevel gear roughing shaping machine. *Il Iron Age* 95:399 F 13 '15  
 Electric alarm for bevel gear generator. *El. K. Morgan, diag Mach* 22:232 N '15  
 Fawcus herringbone gear hobbing machine. *Il diag plan Mach* 21:506-9 F '15  
 Finding change gears for hobbing spiral gears. *G. W. Felton, Mach* 21:905-7 J1 '15  
 Fixture for milling spiral gears. *R. A. Black, diags Mach* 21:918-19 J1 '15  
 Flather automatic gear-cutter. *Il Mach* 21:762-3 My '15  
 Gleason bevel gear planing generator. *Il Mach* 22:152-3 O '15  
 Gleason 30-foot herringbone and spur gear planer. *Il diags Mach* 21:503-5 F '15  
 Gould & Eberhardt turret-type ring gear roughing machine. *Il Mach* 21:761-2 My '15  
 Hobbing small gears on the milling machine. *diag Mach* 21:406 Ja '15  
 Involute gear tooth forming device; simple method of laying out a templet or forming cutter. *G. Luck, diags Mach* 21:716-17 My '15  
 Machine for cutting bevel gears. *Il Iron Tr R* 56:455+ Mr 4 '15  
 Machine for generating worm wheels. *Il Iron Age* 96:751 S 30 '15  
 Making the spiral bevel gear. *Il Automobile* 32:357-60 F 25 '15  
 Methods of chamfering gear teeth. *diags Mach* 21:495-6 F '15  
 Multiple spindle gear roughing machines at the Ford automobile shops. *H. E. Eberhardt, Sibley J* 29:38-9 D '14  
 Newton worm-wheel hobbing machine. *Il Mach* 22:189 O '15; *Ry Age (Mech ed)* 89:597 N '15  
 Results obtained with ground hobs. *E. K. Hammond, Il diags Mach* 21:695-700 My '15  
 Turning, gashing and hobbing wormwheels. *Il diag Mach* 21:969 Ag '15  
 Von Marchthal's system for verifying or replacing the division disks used for gear cutting. *diags Automobile* 32:236-7 F 4 '15

**Gearing**

- Developments in the heat treatment of railway gearing; with discussion. *W. H. Phillips, Il Eng Soc W Fa* 30:737-77 N '14; *Abstract, Iron Tr R* 55:1134 D 17 '14; *Abstract, Am Soc M E J* 37:237-8 Ap '15  
 Differential gears to eliminate rail corrugation. *Il diag Elec Ry J* 46:25-7 J1 3 '15  
 Effect of gear ratio on operating economy. *Il Elec Ry J* 46:68-70 J1 10 '15  
 Gear diagrams: methods for the rapid solution of problems in gear design. *H. D. Hess, Mach* 22:131-4 O '15  
 Gearing for connecting high-speed machines to low-speed machines. *Il Elec W* 65:1476 Je 5 '15  
 Heat treatment of gears. *Iron Age* 96:629 S 16 '15  
 Machines for Warner gear making. *Il Automobile* 32:1129 Je 24 '15  
 Making small gear wheels with a molding machine. *R. A. Miles, Il diags Foundry* 43:161-2 Ap '15  
 New type of speed changing gear. *Il Iron Age* 96:244 J1 29 '15  
 Operating conditions of railway motor gears and pinions. *A. A. Ross, Il Gen Elec R* 18:249-58 Ap '15  
 Railway motor gearing. *W. L. Allen, Il Elec Ry J* 45:1201-3; 46:111-12 Je 26, J1 17 '15  
 Reduction gears on the Pennsylvania. *Il diags Int Marine Eng* 20:339-40 Ag '15  
 Running tool steel pinions with soft steel gears: abstract. *El. S. Sawtelle, Ind Eng* 14:467 D '14  
 Strength of gear teeth. *G. H. Marx and L. H. Cutter, diag Am Soc M E J* 37:637-45 N '15; *Discussion, 37:704 D '15*  
 Turbine speed reduction gear. *Il diags Engineer* 120:315-16 O 1 '15  
 Turbo-reduction gear. *Il diag Power* 41:887 Je 29 '15  
 Use of continued fractions in mechanical problems. *W. W. Johnson, Il diag Mach* 21:802-4 Je '15  
 See also Automobiles—Gearing; Chain gear; Gear cutting; Motor trucks—Gearing

**Gearing, Bevel**

- Hardening bevel wheels by special machine. *Il diag Automobile* 32:461 Mr 11 '15

**Gearing, Helical**

- Planetary reduction gear. *Il Eng & Min J* 100:191-2 J1 31 '15

**Gearing, Herringbone**

- Fawcus herringbone gear hobbing machine. *Il diag plan Mach* 21:506-9 F '15

**Gearing, Spiral**

- Finding change gears for hobbing spiral gears. *G. W. Felton, Mach* 21:905-7 J1 '15  
 Making the spiral bevel gear. *Il Automobile* 32:357-60 F 25 '15  
 Spiral type bevel gears for automobile drives. *A. L. Stewart, Horseless Age* 35:801-2 Je 16 '15; *Discussion, Automobile* 32:1110-11 Je 24 '15

**Gearing, Worm**

- Empirical worm-gear formulas. *El. S. Hedstrom, Mach* 21:724-6 My '15  
 Internal gear drive vs. worm drive. *A. F. Mais, Horseless Age* 35:852 Je 23 '15  
 Internal gear vs. worm truck drives. *C. H. Taylor, Horseless Age* 35:746 Je 2 '15  
 Internal vs. worm gears. *A. F. Mais, Horseless Age* 36:84 J1 21 '15  
 Manufacture of worm gearing by a new process: a comparison of the straight and hourglass type of worms. *C. T. Myers, Il diags Horseless Age* 35:116-21 Ja 20 '15  
 Worm drive for motor trucks. *Horseless Age* 35:441 Mr 31 '15  
 Worm drive vs. internal gear drive. *C. C. Hancock, Horseless Age* 35:650-1 My 12 '15  
 Worm gear efficiency. *C. H. Calkins, Il Horseless Age* 34:982 D 30 '14  
 Gedney Farm hotel. See White Plains, N. Y.—Hotels

**Gelatinizing agents**

- Concise group method for the detection of gelatinizing agents, pasty material and thickeners, used in food products. *L. A. Congdon, J Ind & Eng Chem* 7:606-7 J1 '15

**Gems****Testing**

- Tables for the determination of gems and precious or ornamental stones without injury to the specimen. *A. J. Moses, Sch Mines Q* 36:199-232 Ap '15

**Genemotor**

- Genemotor; a self-starting and lighting system for Fords. *Il diag Horseless Age* 35:537-8 Ap 21 '15; *Same, Automobile* 32:742 Ap 22 '15  
 Genemotor; a single unit starting and lighting system for moderate-priced automobiles. *M. J. Fitch, Il diags Gen Elec R* 18:384-7 My '15

**General electric company**

- Annual report, 1914. *Il Elec W* 65:1031 Ap 24 '15  
 Safety and welfare work in an electrical plant. *C. L. Lucas, Il Mach* 22:210-14 N '15

**Generators, Electric. See Dynamos****Geography****Study and teaching**

- Table-top geography; hints on the construction of simple models. *F. Collins, Il Sci Am* 112:270 Mr 20 '15

**Geography and history**

- Problems of geographic influence. *A. P. Brigham, Sci Am S* 79:374; 80:10-11, 19, 38-9 Je 13, J1 3-17 '15

**Geological time**

- Birth-time of the world: methods of determining its age. *J. Joly, Sci Am S* 79:77-9 Ja 30 '15

- Excursions on geological time. *A. Harker, Sci Am S* 80:118-19 Ag 21 '15

- Sea-salt and geologic time. *H. S. Shelton, Sci Am S* 79:79-80 Ja 30 '15

**Geology**

- Application of geology to the problems of the municipal engineer. *H. Lapworth, Eng & Contr* 43:179-81 Ag 19 '14

- Economic geology. *A. Knopf, Eng & Min J* 99:102-4 Ja 9 '15



**Geology—Continued**

Geology in relation to the exact sciences. A. Harker. *Sci Am S* 80:71 J1 31 '15  
 Origin of the Rocky mountains. S. J. Schofield. *Il Sci Am S* 79:88-9 F 6 '15  
 Potassium salts; an economic geological study. E. M. Heriot. *Il maps Eng & Min J* 100:669-72, 712-14 O 23-30 '15  
 War geology. W. Salomon. *Sci Am S* 80:267 O 23 '15  
*See also* Asphalt; Clay; Coal; Earth; Earthquakes; Gas, Natural; Gypsum; Landslides; Metals; Mineral waters; Mines and mineral resources; Ore deposits; Petroleum; Phosphates; Rocks; Salt

**Alaska**

Geology of Juneau district. F. B. Hyder. *Eng & Min J* 99:901-2 My 22 '15

**Alberta**

Correlation and geological structure of the Alberta oil fields. D. B. Dowling. *map Am Inst Min E Bul* 102:1355-64 Je '15

**Colorado**

Geology and ore deposits of Red Cliff, Colorado. A. H. Means. *Econ Geol* 10:1-11 Ja '15  
 Ores of Gilpin county, Colorado. E. S. Bastin. *Il Econ Geol* 10:262-31 Ap '15

**Connecticut**

Sulphide-bearing rocks from Litchfield, Conn. E. Howe. *diags Econ Geol* 10:330-47 Je '15

**Cuba**

Geology of the iron-ore deposits in and near Daiquiri. J. F. Kemp. *Il diags map Am Inst Min E Bul* 106:1801-36 S '15  
 Iron deposits of Daiquiri, Cuba. W. Lindgren and C. P. Ross. *bibliog Il Am Inst Min E Bul* 106:2171-90 O '15

**India**

Ancient sedimentary iron ores of British India. C. M. Weld. *maps Econ Geol* 10:435-52 J1 '15

**Kentucky**

Harlan, Ky., coal field. W. R. Peck. *Colliery* 35:649-55 J1 '15

**Kongo**

Economic geology of the Belgian Congo, Central Africa. S. H. Ball and M. K. Shaler. *Il map Econ Geol* 9:605-63 O '14; *Excerpts. Eng & Min J* 99:441, 608-11 Mr 6, Ap 3 '15

**Mexico**

Furber oil field, Mexico. E. Degolyer. *Il map Am Inst Min E Bul* 105:1899-1911 S '15  
 Mexican oil fields. L. G. Huntley. *Il maps Am Inst Min E Bul* 105:2089-106 S '15  
 Oil region of northeastern Mexico. V. R. Garza. *bibliog Econ Geol* 10:195-224 Ap '15

**Montana**

Boulder batholith of Montana. P. Billingsley. *diags maps Am Inst Min E Bul* 97:31-47 Ja '15; *Discussion. 101:1123-37 My '15*

**Nevada**

Goldfield and its present boom. H. C. Cutler. *Il Eng & Min J* 99:221-4 Ja 30 '15

**New Mexico**

Geology of the Burro mountains copper district, New Mexico. R. E. Somers. *Il maps Am Inst Min E Bul* 101:957-96 My '15; *Discussion. 108:2476 D '15*

**Oklahoma**

*See also* Petroleum—Oklahoma

**Quebec**

Gold-bearing gravels of Beauce county, Quebec. J. B. Tyrrell. *Am Inst Min E Bul* 99:609-20 Mr '15

**Sicily**

Origin of the sulphur deposits of Sicily. W. F. Hunt. *Il Econ Geol* 10:543-79 S '15

**Sweden**

Problems in iron ore geology in Sweden and in America. P. Geijer. *Il Econ Geol* 10:299-329 Je '15

**Tennessee**

Geological anatomy of a Tennessee zinc mine. F. L. Nason. *diags Eng & Min J* 100:259-62 Ag 14 '15  
 Zinc deposits of eastern Tennessee. F. L. Nason. *Eng & Min J* 99:734-6 Ap 24 '15

**Utah**

Geology of the ore deposits of the Tintic mining district. G. W. Crane. *Am Inst Min E Bul* 106:2147-60 O '15; *Same cond. Eng & Min J* 100:753-7 N 6 '15  
 Processes of mineralization and enrichment in the Tintic mining district. W. Lindgren. 2 pls *Econ Geol* 10:225-40 Ap '15  
 Relation of ore deposits to different types of intrusive bodies in Utah. B. S. Butler. *map Econ Geol* 10:101-22 F '15

**Virginia**

Oriskany iron ores of Virginia. C. M. Weld. *maps Econ Geol* 10:399-421 J1 '15

**Washington**

Petrology and economic geology of the Skykomish basin, Washington. W. S. Smith. *Il map Sch Mines Q* 36:154-85 Ja '15

**Wisconsin**

Wisconsin zinc district. H. C. George. *Il maps Eng & Min J* 100:295-300 Ag 21 '15

**Yellowstone national park**

Geology of the Yellowstone national park. C. H. Butman. *Il Sci Am S* 79:7-9 Ja 2 '15

**Geometrical drawing**

Geometrical constructions. K. D. McFarlane. *diags Mach* 21:668-9 Ap '15

*See also* Mechanical drawing

**Geometry**

*See also* Geometrical drawing

Georgian architecture. *See* Architecture, Colonial

**German silver**

German silver; melting, casting and rolling. R. A. Wood. *Il Metal Ind n s* 13:229-33, 322-3 Je, Ag '15  
 Metallography of German silver. F. C. Thompson. *Met & Chem Eng* 12:785-6 D '14

**Germany**

German science: abstract. *Ind Eng* 14:446 N '14  
 Two points of view. *Sci Am* 113:422 N 13 '15  
*See also* Railroads—Germany

**Army**

Foresters in the German army. T. R. Helms. *Il Am For* 21:527-31 Ap '15  
 German army administration. O. von Gottberg. *Sci Am S* 80:383 D 4 '15  
 German post office and the German army. A. Gradenwitz. *Il Sci Am* 113:25+ J1 3 '15  
 Telegraph and telephone in the German army. *Il Sci Am S* 80:177, 181 S 18 '15

**Colonies**

German colonies as outposts of science. *Sci Am* 111:450 D 5 '14

**Commerce**

Balance of trade in chemicals between the United States and Germany in 1913. *J Ind & Eng Chem* 6:1034-5 D '14

Germany's export trade; how the 1912 foreign business of \$30,000,000 was distributed. M. Braun. *Automobile* 31:1009-13+ D 3 '14

Hints for American exporters. F. Schreibman. *Eng M* 49:562-71 Ag '15

**Economic policy**

German cartel policy. O. H. Luken. *Eng M* 48:508-16 Ja '15

**Food supply**

Feeding the German nation in time of war. *Sci Am* 112:125 F 6 '15

Is Germany self-sustaining in war? B. Baker. *Sci Am* 111:460 D 5 '14

**Industries and resources**

Causes of Germany's industrial prosperity. H. H. Campbell. *Eng M* 48:801-7 Mr '15

**Germany—Industries—Continued**

- Chemical industries of Germany. P. F. Frankland. *Met & Chem Eng* 18:378-87 Je '15;  
Same. *Sci Am S* 79:389-90, 402-3 Je 19-26 '15  
Economic causes of the war traced to mushroom growth of German industries. H. Hauser. *Automobile* 33:382-5 Ag 26 '15  
European textile industry. *Textile World* 49:406-8 Jl '15  
Future of Germany's steel industry. H. H. Campbell. *Iron Age* 96:188-9 Jl 23 '15  
German agriculture in war time. *Sci Am* 112:216 Mr 6 '15  
German industrial competition—after the war. *Engineer* 119:245-6 Mr 12 '15  
German system and method; effect of the war on her industries. *Sci Am S* 79:165 Mr 6 '15  
Germany as nature's competitor. *Sci Am* 113:442 N 20 '15  
Is Germany self-sustaining in war? B. Baker. *Sci Am* 111:460 D 5 '14  
Tasks of German inventors in wartime. *Sci Am* 113:214+ S 4 '15  
Textile trade in Germany. *Textile World* 48:376-8 Ja '15  
What Germany is doing in the chemical and metallurgical industries. *Eng & Min J* 99:829 My 8 '15; Same cond. *Sci Am S* 80:5 Jl 3 '15

**Intellectual life**

- War and the scholars. *Sci Am* 112:488 My 29 '15

**Law**

- Commercial laws of England, Scotland, Germany and France. A. J. Wolfe and E. M. Borchard. *U S Bur For & Dom Com* 97:24-68 '15

**Military aeronautics**

- Zeppelin question; facts and figures indicating the number and capacity of the air fleet. G. Prade. *Sci Am S* 79:214-15 Ap 3 '15

**Navy**

- Recent German naval construction. M. K. Barnett. *Sci Am* 113:484+ D 4 '15  
Von Tirpitz and his navy. *Sci Am* 113:334 O 16 '15  
When the German fleet comes out. *Sci Am* 112:586 Je 12 '15

**Geysers**

- Apparatus to illustrate the action of geysers. *Sci Am* 111:511 D 19 '14

**Gibbons, Grinling, 1648-1721**

- Grinling Gibbons and the woodwork of his age. Review by R. F. Bach. *Arch Rec* 38:189-90 Jl '15

**Gibbs medal**

- Gibbs medal award to Arthur A. Noyes. W. L. Harkins; J. Stieglitz. *J Ind & Eng Chem* 7:449-50 My '15

**Gilpin county, Colorado**

- Ores of Gilpin county, Colorado. E. S. Bastin. *Il Econ Geol* 10:262-91 Ap '15

**Ginpoles**

- Raising a gin pole. E. M. Keys, jr. *diag Power* 41:29 Ja 5 '15  
Tripod of 3-inch pipe sets arch centers in close quarters. *Il Eng Rec* 71:277 F 27 '15

**Girders**

- Chart for designing reinforced concrete beams. R. R. Leffler. *Eng & Contr* 42:135-8 Ag 5 '14  
Columns over clearways in Newark terminal. *diag Eng N* 74:991 N 18 '15  
Design methods in concrete construction. J. Cochran. *Concrete Cem* 6:33-4, 83-5, 145-8 190-2 Ja-Apr '15  
Design of beams, girders and trusses. E. McCullough. *diags Bldg Age* 38:27-8 Jl: 33-4 Ag: 29-30 S; 37-9 O; 37-9 N; 37-8 D '14; 37:39-41 Ja; 31-3 F; 27-8 Mr; 49-50 Ap; 49-50 My; 47-8 Je; 45-6 Jl; 27-8 Ag; 29-30 S; 37-8 N; 51-2 D '15  
Design of rectangular concrete beams. H. Harding. *Am Soc M E J* 37:529-31 S '15  
Design of reinforced concrete T-beams and rectangular beams with steel in compression. M. J. Lorente. *Eng & Contr* 43:182-4 F 24 '15

- Designing of reinforced concrete beams; some data tending to show errors in present theory and practice. L. J. Mensch. *Eng & Contr* 44:108-11 Ag 11 '15  
Determining the stresses in an offset beam. W. L. Cathcart. *Mach* 21:672 Ap '15  
Diagram for wooden beams. W. D. Hudson. *Eng N* 73:639 Ap 1 '15  
Draw diagrams for beams reinforced for compression. W. W. Clifford and C. H. Mangold. *Eng Rec* 72:472 O 16 '15  
Erecting 40-ton girders at a height of 250 feet above the street. *Il diags Eng Rec* 70:699-702 D 26 '14  
Erecting 36-ton girders with steel shears. *Il Eng Rec* 70:606 D 5 '14  
Field methods in concrete construction—beam and slab forms. J. Cochran. *diags Concrete Cem* 6:285-3+ Je '15  
Graphical method for designing simple reinforced concrete beams and data for designing simple, double-reinforced and T-beams. R. R. Leffler. *Eng & Contr* 43:239-42 Mr 17 '15  
Heavy plate-girders in track-elevation work. *Il Eng N* 73:1036-7 My 27 '15  
Heavy trusses and foundation girders used in steel bank building. *diags Eng Rec* 71:713-14 Je 5 '15  
Maximum B-50 shears and moments at points of short beams. W. M. Elliot. *Eng Rec* 72:633 N 20 '15  
Maximum stresses in tension reinforcement. M. J. Lorente. *Eng & Contr* 42:366 O 14 '14  
Nomographic charts for simple beam design. C. D. Conklin, jr. *Eng Rec* 71:809 Je 26 '15  
Nomographic solutions for formulas of various types. R. C. Strachan. *Eng Rec* 71:307-9 Je 26 '15  
Reinforcing spring in place holds concrete to plate girders. R. C. Hardman. *diag Eng Rec* 72:673 N 27 '15  
Results of some tests of I-beam connections. C. S. Whitney. *diags Eng & Contr* 44:36-7 Jl 14 '15  
Shear in beams. E. Jonson. *Eng Rec* 71:25 Ja 2 '15  
Shrinkage and time effects in reinforced concrete. F. R. McMillan. *Il Minn U Bul* 3:1-41 '15; Abstracts. *Eng Rec* 72:261-2 Ag 28 '15; *Eng & Contr* 44:306-10 O 20 '15  
Special methods of reinforced concrete design; with discussion. M. J. Lorente. *diags Boston Soc C E J* 2:266-82 S '15  
Suspended beam forms—their advantages and disadvantages. S. Diamant. *diag Eng Rec* 71:120 Ja 23 '15  
Tables for determining the bending moments and shears in simple beams and in beams fixed at one and both ends. S. M. Cotten. *Eng & Contr* 43:335-40 Ap 14 '15  
Tests of I-beam connections made at Cornell. *Eng Rec* 71:746 Je 12 '15  
Tests on the shearing resistance of reinforced concrete beams; abstract. E. Brown, H. M. MacKay and C. M. Morssen. *Am Soc M E J* 37:724 D '15  
Torsion strength of reinforced concrete beams. *Am Soc M E J* 37:49-50 Ja '15  
*See also* Bridges; Building; Graphic statics; Roofs; Steel construction; Strains and stresses; Trusses

**Glands**

- Biochemical systems and their function in the development of the organism. W. Bechterew. *Sci Am S* 79:131 F 27 '15  
Therapeutic uses of preparations of the ductless glands. R. G. Torrey. *Sci Am S* 80:122-3, 134-5 Ag 21-28 '15

**Glare**

- Eye-sight vs. glaring lights and the fixture. F. L. Godinez. *Arch & Bldg* 46:479-80 D '14  
Glare as a factor in street lighting. H. J. Sweet. *Ellec R & W Ellec'n* 66:439-43 Mr 6 '15  
Glare in museum galleries; the psychological factor in the lighting problem. B. I. Gilman. *diags Arch Rec* 38:262-80, 362-78 Ag-S '15  
In the glare. F. L. Godinez. *Arch & Bldg* 46:421-2 N '14  
Optical properties of diffusing media. *Illum Eng Soc* 10:353-402 no 5 '15

**Glare—Continued**

Testing the gloss of paper and other materials. *diag Illum Engr* 8:425-7 O '15

**Glasgow****Harbor**

Improvement of the river Clyde and harbour of Glasgow, 1873-1914. T. Mason. *Engineer* 119:277 Mr 19 '15

**Glass**

Cleveland lantern for ornamental lighting. W. Harrison. *Il Elec W* 66:521-4 S 4 '15

Contributions of the chemist to the glass industry. A. A. Houghton. *J Ind & Eng Chem* 7:290-2 Ap '15

Daylight glass; abstract. S. H. Gage. *Elec W* 66:1041 N 6 '15

Development of daylight glass; with discussion. E. J. Brady. *diags Illum Eng Soc* 9: 887-80 no 9 '14

Glass-making at the Ediswan works. *Il Illum Engr* 8:434-5 O '15

Holophane glassware for shoplighting. *Illum Engr* 7:562 D '14

How glass is graded. M. McElvoy. *Eng Rec* 72:458 O 9 '15

Lighting of rooms through translucent glass ceilings; with discussion. E. J. Edwards. *Il Illum Eng Soc* 9:1011-20 no 9 '14

Manufacture of laboratory glassware in Great Britain. D. G. Anderson. *J Ind & Eng Chem* 7:543-4 Je '15; Same. *Sci Am S* 80:59 J1 24 '15

Manufacture of optical glass in America. *Sci Am* 112:175 F 20 '15

Partitions of translucent pressed-glass units. *Il Eng N* 72:1269 D 24 '14

Relation of chemistry and mechanical manipulation to the evolution of the glass industry. R. L. Frink. *Met & Chem Eng* 18:800-2 N 1 '15

Sand blast for marking glassware. G. Spitzer and L. S. Trachsel. *diag J Ind & Eng Chem* 7:426-7 My '15

Selenium in the production of colored glass. S. Wein. *Sci Am* 112:361 Ap 17 '15

Triplex glass. *Sci Am S* 80:187 S 18 '15

**Glass bricks**

Translucent glass bricks. *Sci Am S* 79:3 Ja 3 '15

**Glass cutting**

To cut glassware easily. E. J. Hall. *Eng & Min J* 100:315 Ag 21 '15

**Glass factories**

Illumination of glass factories. W. A. D. Evans. *Il Elec R & W Elec'n* 87:78-81 J1 10 '15

**Glens Falls, New York****Bridges**

Architectural effects secured in Glens Falls arch bridge over Hudson river. *Il diags Eng Rec* 72:574-6 N 6 '15

**Gloversville, New York****Sewerage**

Construction and operation of Gloversville sewage works. H. P. Eddy and H. J. Hammer. *Il plan Eng N* 74:744-7, 780-1 O 14-21 '15

**Glucose**

Absorption of glucose by bone-black. H. A. Morton. *Am Chem Soc J* 36:1832-3 S '14

Commercial glucose and its uses. G. W. Rolfe. *Sci Am S* 79:814-15 My '15; Abstract. *Met & Chem Eng* 13:332-3 My '15

Comparison of the optical rotatory powers of the alpha and beta forms of certain acetylated derivatives of glucose. C. S. Hudson and J. K. Dale. *Am Chem Soc J* 37:1264-70 My '15

Contributions of the chemist to the corn products industry. E. T. Bedford. *J Ind & Eng Chem* 7:275-6 Ap '15

**Glue**

Conversion table for glues. I. Ginsberg. *J Ind & Eng Chem* 6:1087 D '14

Hints on the use of glue. W. H. Wilkin. *Bldg Age* 37:63-4 N '15

Tests upon glue, particularly the tensile strength. A. H. Gill. *diag J Ind & Eng Chem* 7:102-6 F '15

**Gluten**

Colloidal swelling of wheat gluten. F. W. Upson and J. W. Calvin. *Il Am Chem Soc J* 37: 1295-1304 My '15

**Glyceric aldehyde**

Isolation of crystalline *dl*-glyceric aldehyde from a syrup obtained by the oxidation of glycerol. E. J. Witzemann. *Am Chem Soc J* 36:2223-34 O '14

Synthetic preparation of *dl*-glyceric aldehyde. E. J. Witzemann. *Am Chem Soc J* 36:1908-16 S '14

**Glycocyanidine compounds**

Researches on hydantoins; a new method of synthesizing glycocyanidine compounds, and the conversion of glycocyanidine into isomers of creatinine. T. B. Johnson and B. H. Nicolet. *Am Chem Soc J* 37:2416-26 O '15

Gogebic range. See Iron mines and mining—Michigan

**Goggles**

Colored glasses for eye protection. M. Luckiesh. *Iron Tr R* 57:487-8 S 2 '15

Goggles for gas welding and cutting. F. W. King. *Il Iron Age* 95:295 F 4 '15

Goggles for grinders. H. W. Davie. *Iron Age* 94:1469 D 24 '14

How to test lenses of goggles. F. W. King. *Foundry* 43:449-50 N '15

Proper eye protection. W. B. McKibbin. *Il Mach* 21:296 D '14

Specifications for chipper's goggles. *diags Iron Tr R* 55:1227 D 31 '14

**Going value**

Des Moines gas company case. *Elec R & W Elec'n* 67:329-30 Ag 21 '15

Utilities bureau; conference on valuation. Philadelphia, 1915. *Elec Ry J* 46:1032-3 N 20 '15

Valuation of water works properties. H. P. Gillette. *Eng & Contr* 44:258-61 O 6 '15

**Gold**

Gold and silver statistics. F. Hobart. *Eng & Min J* 99:47-8 Ja 9 '15

What excessive gold supply may do. *Eng & Min J* 100:465-6 S 18 '15

See also Gold dredging; Gold milling; Gold mines and mining; Quartz

**Gold assaying**

Amalgamation tests. W. J. Sharwood. *Am Inst Min E Bul* 104:1659-70 Ag '15; Excerpts. *Met & Chem Eng* 13:927 D 1 '15

Determination of platinum, palladium and gold. A. M. Smoot. *Eng & Min J* 99:700-1 Ap 17 '15

Determining percentage of gold in quartz. *Met & Chem Eng* 12:744 D '14

Gold and silver assaying. S. Fischer, jr. *Met & Chem Eng* 12:771-3 D '14

Rapid method for washing gold beads. W. S. Black. *Il Eng & Min J* 98:1141-2 D 26 '14

**Gold dredging**

Application of electric motors to gold dredges. G. B. Rosenblatt. *Il diag Am Inst E E Fro* 38:1165-76 Ag '14; Abstract. *Eng & Min J* 98:739-40 O 24 '14; Discussion. *Am Inst E E Fro* 34:144-54 Ja '15

Dredging and hydraulic operations in the Yukon. *Eng & Min J* 100:481 S 18 '15

Flume-type elevator dredges in Alaska. L. H. Eddy. *Il Eng & Min J* 99:1139-30 Je 26 '15

Gold dredging in 1914. R. E. Cranston. *Eng & Min J* 99:100-1 Ja 9 '15

Gold dredging in the Philippines. *Il Eng & Min J* 99:685-9 Ap 17 '15

High yield of iditarod dredge. *Il Eng & Min J* 99:727-8 O 24 '15

Nechi mines (Columbia) Ltd. *Eng & Min J* 99: 244-5 Ja 30 '15

Pato property of Oroville dredging company. W. A. Frichard. *Eng & Min J* 99:231-4 Ja 30 '15

Requirements for prospecting dredging ground in the Yukon. J. A. Macdonald. *Eng & Min J* 99:828-9 My 8 '15

Steam-electric-driven dredge for the Philippines. *Il Eng & Min J* 99:898-900 My 22 '15

See also Gold mines and mining

**Gold metallurgy**

Acid treatment of gold precipitate; abstract. H. A. White. *Met & Chem Eng* 13:118-19 F '15

Chlorination of ores. *diag Met & Chem Eng* 13:505 Ag '15

Concentrating Gold King ores. W. C. Prosser. *flow sheet Eng & Min J* 100:633-4 O 16 '15

**Gold metallurgy—Continued**

- Concentration formulas. J. E. Clennell. Eng & Min J 100:724-5 O 30 '15  
 Concentration formulas. L. Janin, jr. Eng & Min J 100:889 N 27 '15  
 Concentration of gold in bottoms in the copper converter; abstract. H. F. Collins. Met & Chem Eng 13:446 JI '15  
 Electric furnace for gold refining at the Alaska-Treadwell cyanide plant. W. P. Lass. II diag Am Inst Min E Bul 103:1443-7 JI '15; Same. Met & Chem Eng 13:566-7 S 1 '15; Excerpt (Electric precipitate-melting furnace) Eng & Min J 100:270-1 Ag 14 '15; Abstract. Eng M 50:456 D '15; Discussion. Am Inst Min E Bul 103:2456-8 D '15  
 Flotation in gold metallurgy. W. B. Blyth. Met & Chem Eng 13:308 My '15  
 Gold precipitation on paper. D. Lay. Eng & Min J 100:276-7 Ag 14 '15  
 Metallurgical practice in the Witwatersrand district, South Africa. F. L. Bosqui. diags Am Inst Min E Bul 101:997-1033 My '15; Abstract. Met & Chem Eng 13:925-7 D 1 '15; Discussion. Am Inst Min E Bul 103:2436-53 D '15  
 Metallurgy at the International engineering congress; symposium on gold and silver. Met & Chem Eng 13:721-5 O 15 '15  
 Mill and cyanide plant of Chiksan mines, Korea. C. W. De Witt. II plan Am Inst Min E Bul 101:931-6 My '15; Abstract. Met & Chem Eng 13:388 Jc '15  
 Progress in gold and silver metallurgy in 1914. Met & Chem Eng 13:3-5 Ja '15  
 Recent Rand metallurgical practice. M. T. Murray. Eng & Min J 99:771-3 My 1 '15  
 Refining base bullion. W. S. Mann. Eng & Min J 99:535 Mr 20 '15  
 Refining gold by Miller's chlorine process; abstract. R. Pearson. Met & Chem Eng 13:508 Ag '15  
 Relative efficiency of various amalgams in the recovery of gold. F. A. Thomson and R. Kefler. Met & Chem Eng 13:387-70 Jc '15  
 Tonopah plant of the Belmont milling co. A. H. Jones. II diags flow sheet Am Inst Min E Bul 104:1731-58 Ag '15; Abstract. Met & Chem Eng 13:811-12 N 1 '15  
*See also Cyanide process*

**Gold milling**

- Amador consolidated milling plant, Amador City, Calif. T. S. O'Brien. II flow sheet Eng & Min J 100:255-7 Ag 14 '15  
 Crushing and grinding. L. D. Mills and M. H. Kuryla. Met & Chem Eng 13:721-2 O 15 '15  
 Gold milling in California—a comparison. L. A. Palmer. II diag Met & Chem Eng 13:617-24 S 15 '15  
 Grinding ore for cyanidation; a suggested modification for all sliming practice. E. S. Pettis. Met & Chem Eng 13:910 Ja '15  
 New mill at Elko-Prince mine, Midas, Nevada. Eng & Min J 100:474 S 18 '15  
 Tonopah plant of the Belmont milling co. A. H. Jones. II diags flow sheet Am Inst Min E Bul 104:1731-58 Ag '15; Abstract. Met & Chem Eng 13:811-12 N 1 '15

**Gold mines and mining**

- Ancient gold mining in East Africa; extracts from Diodorus the Sicilian. A. B. Coll. Eng & Min J 99:1041-2 Jc 12 '15  
 Cost of an ounce of gold. P. E. Barbour. Eng & Min J 100:49-50 JI 10 '15  
 Gold recovery at placer mines. D. F. Carver. II Eng & Min J 100:472-3 S 18 '15  
 Opportunity in placer mining. C. Hartley. Eng & Min J 99:185-8 Ja 28 '15  
 Tonopah in 1914. F. Bradshaw. Eng & Min J 99:154-5 Ja 16 '15

*See also Gold dredging; Hydraulic mining*

**Alabama**

- Gold deposits in Alabama. Eng & Min J 99:548 Mr 20 '15

**Alaska and the Yukon**

- Bagley scraper for gravel mining in Alaska. L. E. Eddy. II Eng & Min J 100:257-8 Ag 14 '15  
 Dawson, Nome and Fairbanks. H. I. Ellis. maps Eng & Min J 99:517-30 Mr 20 '15  
 Development methods at Fairbanks. H. I. Ellis. II diags Eng & Min J 99:1023-9 Jc 12 '15

- Elevating placer tailings with a Hayward bucket. H. I. Ellis. Eng & Min J 100:309-10 Ag 21 '15  
 Koyukuk placer-mining district. Eng & Min J 99:1021-2 Jc 12 '15  
 Prospecting methods at Fairbanks. H. I. Ellis. II diags Eng & Min J 99:305-10 My 8 '15  
 Quartz mining in Fairbanks district, Alaska. Eng & Min J 100:435 S 11 '15  
 Shushana mining district. H. I. Ellis. II map Eng & Min J 99:731-3 Ap 24 '15  
 Winter mining at Fairbanks. H. I. Ellis. II diags Eng & Min J 100:707-11 O 30 '15  
 Yakataga beach placers. A. G. Thompson. II Eng & Min J 99:763-5 My 1 '15

**Bolivia**

- Gold mining in Bolivia. F. C. Lincoln. II Eng & Min J 99:351-4 F 20 '15

**California**

- Drift mines of California. J. D. Hubbard. II Eng & Min J 100:837-8 O 23 '15  
 Pocket deposits of the Klamath mountains, California. H. G. Ferguson. II maps Econ Geol 10:241-61 Ap '15  
 Quartz veins in lamprophyre intrusions. J. F. McLennan. Eng & Min J 99:11-13 Ja 2 '15  
 Seneca mining district, California. W. H. Wright. II map Eng & Min J 99:1072-4 Jc 19 '15  
 With the forty-niners. Eng & Min J 100:831 N 27 '15

**Canada**

- Kowkash gold district. Eng & Min J 100:595-6 O 9 '15

**Chile**

- Gold and silver in Chile. M. R. Lamb. II Eng & Min J 99:847-9 My 15 '15

**Colombia**

- Placers of Antioquia, Colombia. R. W. Perry. II map Eng & Min J 100:595-9 O 9 '15

**Colorado**

- Tenderfoot Hill, Cripple Creek. Eng & Min J 100:344 Ag 28 '15

**Dutch Guiana**

- Gold-bearing quartz veins in Dutch Guiana. J. B. Percival. II Eng & Min J 100:511-12 S 25 '15

**Nevada**

- Developments at Atlanta, Nev. P. W. Meyers. II Eng & Min J 99:541 Mr 20 '15  
 Pittsburg-Dolores mining co.'s mill at Rockland, Nevada. E. J. Schrader. II Eng & Min J 99:653-4 Ap 10 '15

**New Mexico**

- Pinos Altos district, New Mexico. L. L. Wright. II Eng & Min J 99:132-5 Ja 16 '15

**Oregon**

- Hydraulic mining at Waldo, Ore. W. H. Wright. II Eng & Min J 100:211-14 Ag 7 '15

**Quebec**

- Gold-bearing gravels of Beauce county, Quebec. J. E. Tyrrell. Am Inst Min E Bul 99:609-20 Mr '15

**Russia**

- Elderslinsky gold mines. N. T. Truschkoff. II Eng & Min J 99:1017-21 Jc 12 '15

**Siberia**

- Improvements at Lena goldfields. Eng & Min J 99:333-4 F 13 '15

**Transvaal**

- Mining conditions on the Witwatersrand. W. L. Honnold. diags Am Inst Min E Bul 104:1801-21 Ag '15  
 Mining in the Transvaal in 1914. H. F. Marriott. Eng & Min J 99:131-2 Ja 9 '15  
 Mining on the Witwatersrand. II Eng & Min J 100:320-2 Ag 21 '15  
 Ore reserves of the Rand. A. C. Key. Eng & Min J 100:139-40 JI 24 '15  
 Power supply of the Central mining-Rand mines group. J. H. Rider. II diags Inst E J 53:809-32; Discussion. 53:633-40 My 1 '15

## Gold mines and mining—Continued

## Victoria

Placer mining in Victoria. *Eng & Min J* 99: 188 Ja 23 '15

## Washington

Gold Bar hydraulic mine, Blewett, H. I. *Eng & Min J* 100:878-9 O 23 '15

## Gold plating

Gold and platinum plating; practical formulae with instructions for their use. M. Kateridge. *Metal Ind n s* 13:109-10 Mr '15  
Single cell gold plating. F. L. McAlloon. *Metal Ind n s* 12:510 D '14

## Gold washing

Rapid method for washing gold beads. E. J. Hall. *Eng & Min J* 100:149-50 JI 24 '15

## Golden-rod

Volatile oils of the genus *solidago*. E. R. Miller and J. M. Moseley. *Am Chem Soc J* 27:1285-94 My '15

## Goldfield, Nevada

Goldfield and its present boom. H. C. Cutler. *Eng & Min J* 99:321-4 Ja 30 '15

## Goldfield Consolidated

Mining costs at Goldfield. *Eng & Min J* 99: 909 My 22 '15

## Golf

Tennis as compared to golf. D. Douglass. *Sci Am* 113:333 O 30 '15

## Golf balls

Flight of a golf ball. *Sci Am S* 79:158 Mr 6 '15

## Golf links

Electric lighting of "court" and "clock" golf courses. M. E. Trimble. *Eng Elec W* 66: 308 Ag 7 '15

## Goltra process

Concentration by the Goltra process: beneficiation of Brown iron ores by means of a current of hot air and properly located screens. W. B. Phillips. *Iron Age* 94:1148-50 N 13 '14; *Abstract. Eng M* 48:582-5 Ja '15

Good roads congress, American. See American road builders' association

Good roads convention, Canadian and International. See Canadian and international good roads convention

## Good roads show, Sixth

Sixth Good roads show, Chicago, Dec. 14-18. *Eng & Min J* 99:321-4 Ja 30 '15

## Good roads week

Report on Good roads week at Cornell university. *Good Roads n s* 9:213-14 My 29 '15

## Government employees

Accommodations de luxe for federal valuation engineers. *plan Eng Rec* 70:896-8 D 26 '14

Canvastown for government employees in New South Wales. *Sci Am* 112:479 My 22 '15

Comfort for workers in Washington's government buildings. D. A. Willey. *Sci Am S* 78:373-4 D 12 '14

See also Civil service

## Government ownership

Discussion on government ownership. *Eng Ry J* 44:1289-90 D 12 '14

Evils of government ownership. J. Bourne, jr. *Eng Ry J* 46:707-10 O 9 '16; Same cond. *Ry R* 57:490-2 O 16 '15

Government-owned dyestuff works in Great Britain. *Textile World* 48:371-8 Ja '15

Government ownership and municipal ownership condemned: discussion at 15th annual meeting of the National civic federation. *Eng R & W Elec'n* 65:1142 D 13 '14

Government ownership and the miner. E. L. Bailey. *Colliery* 35:490-1 Ap '15

Government ownership discussed in Manila. *Eng Ry J* 46:22-3 JI 8 '15

Governmental versus private enterprise discussed at National civic federation meeting. *Eng Ry J* 46:1140-1 D 12 '14

Radium situation. W. F. Bleecker. *Met & Chem Eng* 13:148-5 Mr '15; *Abstract. Eng M* 49:102-3 Ap '15

See also Government regulation of industry; Municipal ownership; Public service corporations; Railroads and state

## Government regulation of industry

Address to National association of cotton manufacturers. A. G. Duncan. *Textile World* 49:199-202 My '15

Administration and business men. L. Cromwell. *Textile World* 49:240-2 My '15

Business and government. E. Root. *Ry R* 57: 17-19 JI 3 '15

Destructive and constructive regulation of business. R. R. Lounsbury. *Am Ind* 16:10-13 Ag '15

German cartel policy. O. H. Luken. *Eng M* 48: 508-16 Ja '15

Government's business. It needs regulation by business men. *Ry R* 55:746-8 D 19 '14

Right of the states. *Ry Age* 59:43-4 JI 9 '15

Right of the states which is often overlooked; constitutional duty of federal government to protect from harmful regulation of commerce by sister states. A. P. Thom. *Ry Age* 59:49-53 JI 9 '15

See also Electric railroads and state; Factory laws; Gas companies—Regulation; Government ownership; Interstate commerce; Interstate commerce commission; Labor laws; Municipal ownership; Public service commissions; Public service corporations—Regulation; Railroads—Rates; Railroads and state; Waterworks—Regulation

Governors, Conference of. See Conference of governors

Governors (machinery)

Analysis of waterwheel-governor effort; abstract. E. D. Searing. *Eng Elec W* 65:1518-14 Je 13 '15

Blocking up the governor. R. O. Richards. *Eng Elec W* 65:1518-14 Je 13 '15

Compensations for Corliss governors. C. L. Ware. *Eng Elec W* 65:1518-14 Je 13 '15

Corliss governor compensator. J. Stewart. *Eng Elec W* 65:1518-14 Je 13 '15

Disturbing actions of a shaft governor; abstract. G. Hamabe. *Am Soc M E J* 37:124-5 F '15

Double-acting speed controller. *Eng Mach* 22:247 N '15

Governing of marine steam turbines. *Eng Mach* 22:247 N '15

Governor-stop control and belt tightener. *Eng Mach* 22:247 N '15

Governors for motor vehicles. T. Douglas. *Eng Mach* 22:247 N '15

Improved hydraulic governor. *Eng Mach* 22:247 N '15

Metropolitan S. A. E. discusses aeroplanes and governors. *Eng Mach* 22:247 N '15

One governor controls two waterwheels. *Eng Mach* 22:247 N '15

Pendulum governor compensator. B. S. Hanson. *Eng Mach* 22:247 N '15

Prize-winning regulating device. *Eng Mach* 22:247 N '15

Pros and cons of speed governors. *Eng Mach* 22:247 N '15

Grace, Eugene G.

Future leaders of the steel industry. C. J. Stark. *Eng Mach* 22:247 N '15

Grade crossing elimination

Adjustment of the consequential damages at the Tower Grove crossings. L. R. Bowen. *Eng Mach* 22:247 N '15

Boston & Albany railroad improvements at Worcester, Mass. L. G. Morphy. *Eng Mach* 22:247 N '15

Chaos in apportioning the cost of grade crossing elimination. *Eng Mach* 22:247 N '15

Chief engineers discuss grade-crossing law and cost distribution. *Eng Mach* 22:247 N '15

Costs of bridges for grade-crossing elimination. C. N. Bainbridge. *Eng Mach* 22:247 N '15

Difficult grade crossing elimination in Albany, N. Y. *Eng Mach* 22:247 N '15

Eliminating railway grade crossings in Los Angeles. *Eng Mach* 22:247 N '15

Eliminating the Tower Grove grade crossing at St. Louis. *Eng Mach* 22:247 N '15

- Grade crossing elimination—Continued**  
 Elimination of grade crossings; apportionment of cost; manner of obtaining elimination; construction. L. B. Reilly. Boston Soc C E J 2:185-48 Ap '15  
 Elimination of the Tower Grove crossings, St. Louis, Mo. S. L. Womson. II diag plans Assn Eng Soc J 55:95-115 O '15; Same cond. Ry Age 59:799-802 O 29 '15; Same cond. Eng Rec 72:627-9 N 20 '15  
 Grade crossing eliminated without halting traffic. plan Eng Rec 71:722 Je 5 '15  
 Grade crossing elimination. Ry Age 59:634-5 O 8 '15  
 Grade-crossing law and its effect on grade-crossing elimination. C. W. Stark. Eng Rec 71:927-9 Mr 13 '15  
 Needless grade separation required of railroads. C. E. Smith. Eng Rec 71:674 My 29 '15  
 Pennsylvania improvements through Piqua, Ohio; new station and second track on revised grade, eliminating eight street grade crossings. II plans Ry Age 68:1003-6 My 14 '15  
 Study of grade crossing elimination in cities. C. N. Bainbridge. diag Ry Age 59:45-8 JI 9 '15  
 Substantial crossing barrier. II Ry Age 59:105 JI 16 '15  
 Track elevation on the Nickel Plate railroad at Chicago. II diag map Eng N 74:888-91 N 4 '15  
*See also* Railroads—Track depression; Railroads—Track elevation
- Grade crossings**  
 Grade crossings in Canada. Ry Age 57:1180 D 25 '14  
 Protection of grade crossings. II Ry R 57:531-2 O 23 '15; Same cond. Ry Age 59:763-4 O 23 '15  
 Track crossing on curve with super-elevation. plan Eng N 72:1183 D 3 '14  
*See also* Grade crossing elimination; Railroads—Crossings; Railroads—Track elevation
- Grading**  
 Conditions determining maximum grades and methods and cost of road grading in West Virginia. A. D. Williams. Eng & Contr 43:16-17 Ja 6 '15; Excerpt (Cost of grading and excavating). Concrete Cem 5:267-8 D '14  
 Grading machine loads nine two-yard wagons in ten minutes. II Munic Eng 49:124-5 S '15  
 Power road machinery with special reference to hauling and earth road grading. N. De Wind. II Eng & Contr 43:83-5 Ja 27 '15  
 Preliminary estimating of grading simplified. J. M. Brown. Eng Rec 71:810-11 My 15 '15  
 Street and road grading, 1915; tabulation. Munic Eng 48:257-60 Ap '15  
*See also* Railroads—Grade; Roads—Grade
- Grahamite**  
 Variations of the physical characteristics of a petroleum residuum with increasing percentages of grahamite. H. Rossbacher. J Ind & Eng Chem 7:205-6 Mr '15
- Grain**  
 Accuracy of grain in weights. F. C. Maegly. Ry Age 58:888-9 Ap 23 '15  
 Acid ratio: a new method for determining the proteolytic strength of germinated grain in technical analysis. C. A. Nowak. J Ind & Eng Chem 7:858-9 O '15  
 Apparatus for cleaning, separating and delivering grain. II diag Engineer 119:338 Ap 2 '15  
 Western rate advance hearing. Ry Age 58: 938-9 Ap 30 '15
- Grain dust**  
 Cereal dust explosions. D: J. Price. Colliery 36:871-2 JI '15  
 Explosibility of grain dusts. D: J. Price and H. H. Brown. Sci Am S 78:368 D 5 '14  
 Explosion leaves grain elevator practically intact. II Eng Rec 72:119-20 JI 24 '15
- Grain elevators**  
 Design, construction and detailed costs of the sliding forms for a reinforced concrete grain storage house. W: W. Hay. Eng & Contr 44:304-5 O 20 '15  
 Electric drive for grain elevators. Elec R & W Elec'n 66:378 F 27 '15
- Electricity in grain elevators. H. E. Stafford. II diag Am Inst E E Pro 34:1087-1103 Je '15; Abstract. Elec W 66:90 JI 10 '15  
 Pneumatic grain elevating plant. II diag (supp) Engineer 120:361, 366 O 15 '15  
 Righting a twenty-thousand-ton grain elevator. II Sci Am 111:524 D 26 '14  
 Righting the tilted grain elevator of the Canadian Pacific Ry. II Concrete Cem 6:196 Ap '15  
 Settlement of two grain elevators. Eng N 73: 872-3 My 6 '15
- Grand Trunk Pacific railway**  
 Plan and profile of the western section. map Eng N 74:245 Ag 5 '15
- Grandstands**  
 Cast-iron standards for ball-park seats. diag Eng N 74:511 S 9 '15  
 Grandstand at Sheepshead Bay speedway, New York. II diag Eng Rec 72:411-12 O 2 '15  
 Large steel grandstand for automobile race-track, Sheepshead Bay, N. Y. II Eng N 74: 655 S 30 '15  
 National league ball park at Boston, Mass. II diag Eng N 74:874-7 Ag 19 '15  
 National league baseball park of reinforced concrete at Boston. W. B. Conant. II diag Concrete Cem 7:53-5 Ag '15
- Granite**  
 Boulder batholith of Montana. P. Billingsley. diag maps Am Inst Min E Bul 97:31-47 Ja '15  
 Heating tests, and the light they throw on the cause of the disaggregation of granite. W. A. Tarr. Econ Geol 10:348-67 Je '15
- Granite blocks**  
 Manufacture of granite paving blocks. II Eng N 73:376-81 F 25 '15
- Granite pavements.** *See* Pavements, Granite
- Grape juice**  
 New discovery in the American wine industry; concentrating grape juice by freezing. Sci Am 113:141 Ag 14 '15
- Graphic methods**  
 Generalized form of Hooke's law. E. R. Hedrick. Eng N 74:542-3 S 16 '15  
 Graphic method for speed-time and distance-time curves. E. C. Woodruff. Am Inst E E Pro 33:1689-92 N '14; Discussion. Am Inst E E Pro 34:2804-46 N '15; Abstract. Elec Ry J 44:1155-6 N 21 '14  
 Graphic methods for presenting data. W. C. Brinton. II Eng M 47:851-66, 817-29; 48:73-85, 229-41, 386-406, 551-68 Ag '14-Ja '15  
 Graphics in maintenance work. Elec Ry J 46: 947-51 N 6 '15  
 Graphs as an aid to the plumber and fitter. H. Whitehead. Dom Eng 70:186-8 Ja 30 '15  
 Graphs, charts and statistics as aids to administration. E. C. Stothart. Elec Ry J 46: 665-7 O 2 '15  
 Joint committee on standards for graphic presentation; preliminary report. Am Soc M E J 37:vii-ix Ag '15; Same. Am Inst Min E Bul 106:ix-xii O '15; Same. J Ind & Eng Chem 7:894-5 O '15; Same cond. Eng Rec 72:633 N 20 '15  
 Nomographic charts for Kutter's formula. G. S. Coleman. Eng Rec 72:489 O 16 '15  
 Practical applications of the principles of statistics. G: S. Ruffner. Assn Eng Soc J 53: 264-80 D '14  
 Simplified method of determining cost of coal per 1000 lb. of steam; chart. W. H. Schott. Elec W 66:754-6 O 2 '15; Same. Power 42:456-8 S 28 '15; Same. Eng & Min J 100:636-8 O 16 '15  
 Solar declinations computed by graphic method. R. R. V. Reynolds. Eng Rec 72:160 Ag 7 '15  
 Solution of pulp problems by graphic methods. W. J. McCauley. Eng & Min J 100:98-100 JI 17 '15
- Graphic statics**  
 Design methods in concrete construction. J. Cochran. Concrete Cem 6:83-5 F '15  
 Graphical analysis of arches with fixed ends greatly simplified. C. S. Whitney. Eng Rec 72:324-6 S 11 '15

**Graphic statics—Continued**

- Graphical method for designing simple reinforced concrete beams and data for designing simple, double-reinforced and T-beams. R. R. Laffier. Eng & Contr 43:239-42 Mr 17 '15
- Method for determining two-hinged arch reactions. C. S. Whitney. Eng & Contr 44:123-4 Ag 18 '15
- Nomographic charts for simple beam design. C. D. Conklin, Jr. Eng Rec 71:309 Je 26 '15
- Nomographic solutions for formulas of various types. R. C. Strachan. Eng Rec 71:307-9 Je 26 '15
- Reinforced-concrete conduit analysis simplified by theory of displacements. C. S. Whitney. Eng Rec 72:436-8 O 16 '15
- See also Girders; Mechanical drawing; Steel construction; Strains and stresses

**Graphite**

- Can profits be made in American graphite? J. Bartley. Iron Age 96:86-8 Jl 8 '15
- Defense of natural graphite lubricant. Horseless Age 35:127 Ja 27 '15
- Feeding graphite to boilers. C. N. Wiley. diag Power 41:616-17 My 4 '15
- Graphite in boilers. W. Weaver. Power 41:131-2 Ja 26 '15
- Phenix oil and graphite cylinder lubricator. diag Power 41:730-1 Je 8 '15
- Silica-graphite paint. Iron Tr R 57:364 Ag 19 '15
- Uses of graphite. Metal Work 34:463 O 8 '15
- Various forms of graphite. Sci Am S 80:25 Jl 10 '15

**Grates**

- Air-space area of grates. R. T. Strohm. Elec W 65:103 Ja 9 '15
- German progress in steam boiler firing; abstract. Pradel. diag Am Soc M E J 37:185-7 Mr '15
- Hopes pyramid dumping and stationary grates. II Power 42:166-7 Ag 3 '15
- Making a herringbone grate pattern. E. L. Scillitoe. diag Foundry 43:184 My '15
- Placzek traveling grate. diag Am Soc M E J 37:118 F '15
- Pollion furnace grate. diag Power 41:499 Ap 13 '15

See also Locomotive grates

**Grates (fireplaces). See Fireplaces****Gravel**

- Centrifugal dredging pump applied to production of sand and gravel. II Concrete Cem 7:191-2 N '15
- Cost of hydraulic sand and gravel mining. R. J. Borhek. Eng & Contr 43:573-4 Je 30 '15
- Dragline cableway is an effective tool for sand and gravel plants. II Eng Rec 71:716-18 Je 6 '15
- Economical operation of a gravel ballast pit. Ry Age 59:117-19 Jl 16 '15
- Electricity in sand and gravel plants. II Elec R & W Elec'n 37:599-602 O 2 '15
- Equipment and operation of plant at Waukesha, Wis. S. E. Bates. II diag Concrete Cem 7:165-8 N '15
- Gravel and sand plants; stationary and portable screening and washing plants. II diag Munic J 38:449-50 Ap 1 '15
- Gravel dredge which delivers graded materials. A. Gottschalk. II Eng Rec 70:852 D 12 '14
- Gravel washing plant with unique features. Pontiac, Mich. II Concrete Cem 7:168-70 N '15
- Hoist on revolving headframe operates dragline. II diag plan Eng Rec 71:742-3 Je 12 '15
- How the problem, What is gravel? might be solved. S. P. Sears. Eng N 73:180-1 Ja 23 '15
- Large floating gravel-washing plant in Indiana. II Eng Rec 70:667-8 D 19 '14
- Large gravel-washing plant. Akron, O. II Eng N 73:1225 Je 24 '15; Eng & Contr 43:526 Je 9 '15
- Notes on screens for gravel washing and screening. W. H. Wilms. diag Eng N 73:440-1 Mr 4 '15; Same cond. Ind Eng 15:80-1 Ag '15
- Portable gravel screening and washing plant. M. D. Campbell. plan Ry Age 59:345-6 Ag 20 '15

Stripping of gravel pits by hydraulic methods. W. H. Wilms. diag Ry Age 58:1430-3 Je 18 '15

Use and tests of unscreened gravel: Illinois state highway department. C. Older. II Eng N 72:1204-5 D 17 '14

Wearing tests for sand and gravel. F. L. Roman. Good Roads n s 9:186-7 My 1 '15

See also Concrete—Aggregate

**Gravel roads. See Roads, Gravel****Gravitation**

Modern theories of gravitation. Sci Am S 79:317 My 15 '15

See also Specific gravity

**Graywacke**

Composition of graywacke. Eng & Min J 100:597 O 9 '15

**Grease traps. See Plumbing—Traps****Greases. See Lubrication and lubricants; Oils and fats****Great Britain**

See also Railroads—Great Britain

Admiralty Inventions board

Board of inventions. Engineer 120:30 Jl 23 '15

Board of trade

Commercial organizations in the United Kingdom with a description of British manufacturers' and employers' organizations. A. J. Wolfe. U S Bur For & Dom Com 102:29-36 '15

**Commerce**

British engineers' association; third meeting, Manchester. Engineer 118:578-9 D 18 '14

Commercial organizations in the United Kingdom with a description of British manufacturers' and employers' organizations. A. J. Wolfe. U S Bur For & Dom Com 102:1-53 '15

Export trade to the overseas dominions. Engineer 119:333-5 Ap 16 '15

Foreign mineral trade of Great Britain. Eng & Min J 99:442 Mr 6 '15

Institution of mechanical engineers: address. W. C. Unwin. Engineer 119:418 Ap 23 '15

**Commercial policy**

Plea for scientific and technical commissioners. W. P. Digby. Inst E E J 53:799-801 Je 1 '15; Excerpts. Met & Chem Eng 13:502 Ag '15

**Industries and resources**

Presidential address before Institution of civil engineers. A. Ross. Engineer 120:430-1 N 5 '15

**Law**

Commercial laws of England, Scotland, Germany and France. A. J. Wolfe and E. M. Borchard. U S Bur For & Dom Com 97:9-23 '15

**Manufactures**

British engineers' association; third meeting, Manchester. Engineer 118:578-9 D 18 '14

**Navy**

British battle-fleet: its inception and growth throughout the centuries by F. T. Jane. Review. Engineer 118:528-9 D 4 '14

Our navy. Engineer 119:185 F 19 '15

Submarine chasers for the British navy. II Sci Am 113:424 N 13 '15

**Great Lakes**

Buffalo sewage disposal and water-supply in relation to the pollution of the Great Lakes. Eng N 73:3-9 Ja 7 '15

See also Welland ship canal

**Great Northern railway**

Additions and betterments of the Great Northern Ry. Ry R 56:11-13 Ja 2 '15

**Greece**

Kavala, the debatable land. Sci Am S 80:312-13 N 18 '15

**Greek architecture. See Architecture, Greek****Greek language**

How we got our alphabet. W. Rice. Inland Ptr 54:689-90 F '15

**Greenhouses**

- Construction of a movable greenhouse. II Bldg Age 37:69-71 Ag '15  
 Design of greenhouse heating plants. P. McKee. Metal Work 83:805; 84:44-6, 387 Je 4, Ji 9, S 10 '15  
 Features of the modern greenhouse. J: Y. Dunlop. II Bldg Age 37:38-41 O '15  
 Heating equipment for large greenhouse. G: W. Loeber. II diag Metal Work 83:66-70 Ja 1 '15  
 Heating greenhouses by hot water. G: W. Loeber. diag Dom Eng 70:399-401; 71:31-3, 124-6, 244-5, 362-6 Mr 27, Ap 10, My 1, 29, Je 26 '15

**Grenades**

- Hand grenades. E: C. Crossman. II Sci Am 112:427 My 8 '15

**Grenfell, Wilfred Thomason, 1885-**

- Dr. Grenfell's missions in Labrador. H. H. Heath. II Inland Ptr 55:53-4 Ap '15

**Grinding and polishing**

- Canvas polishing wheels. B. H. Divine. Metal Ind n s 12:449 N '15  
 Eye protection for grinders and machinists. H. W. Davis. II Mach 21:570-1 Mr '15  
 Form grinding. II diag Mach 21:883-92 Ji '15  
 Grinding and distribution of tools. Ry Age (Mech ed) 89:415-16 Ag '15  
 Grinding and polishing stove plate trimmings. F. W. Hobbs. Foundry 43:236-7 Je '15  
 Grinding cone pulleys at the Norton plant. H. W. Ault. II diag Mach 22:32 S '15  
 Grinding crowned pulleys. H. W. Dunbar. II Mach 21:893-4 Ji '15  
 Grinding of metals; abstract. J. Horner. Ind Eng 15:59 F '15  
 Grinding shrapnel shells on Norton grinding machines. II diag Mach 21:635-7 Ap '15  
 Grinding street car wheels under the car. II Mach 21:462 F '15  
 Grinding vs. milling. J: Mahon. diag Mach 21:315 D '14  
 Institution of mechanical engineers, Manchester meeting, 1915. Engineer 120:417 O 29 '15  
 Internal grinding machines used, methods of handling and examples of work. D. T. Hamilton. II diag Mach 21:983-98 Ag '15  
 Laps and lapping; abstracts. W. A. Knight and A. A. Case. diag Am Soc M E J 37:451-6 Ag '15; Iron Tr R 57:24-6 Ji 1 '15; Mach 21:976-8 Ag '15; Discussion. Am Soc M E J 37:456-8 Ag '15  
 Metallographic grinding and polishing machine. II Iron Age 95:1164 My 27 '15  
 New method of polishing diamond dies. diag Mach 21:279 D '14  
 Plain cylindrical external grinding. D. T. Hamilton. II diag Mach 21:861-82 Ji '15  
 Polishing and buffing. B. H. Divine. Metal Ind n s 12:419-20 O '15  
 Polishing and plating room practices reviewed. F. W. Hobbs. Metal Ind n s 13:414-15 O '15  
 Polishing machines made by the St. Louis machine tool co. II Metal Ind n s 13:386 S '15  
 Polishing wheels. W. C. Gold. II Metal Ind n s 13:15-16, 103-4, 270-80 Ja, Mr, Ji '15  
 Preparation of metal specimens for metallographic tests. II Met & Chem Eng 13:400-1 Je '15  
 Progress in machine shop methods. E. R. Norris. II Iron Tr R 57:747-50 O 14 '15  
 Richards polishing machine. II Metal Ind n s 13:386 S '15  
 Surface and cylindrical grinding: operating conditions and rates of production for typical operations. R. Holmes. II diag Mach 21:283-5 D '14  
 Surface grinding; methods of grinding plane surfaces on reciprocating and rotary surface grinding machines. D. T. Hamilton. II diag Mach 22:33-42 S '15  
 Theory of grinding. H. H. Asbridge. Engineer 120:440 N '15  
 Theory of grinding. J. J. Guest. Engineer 120:394-5 O 22 '15; Abstract. Am Soc M E J 37:658-9 N '15  
 Tumbling barrel ("Jim Butler") work. T. C. Eichstaedt. Metal Ind n s 13:388-9 S '15  
 Two-belt rotary polishing machine. II Iron Age 95:448 F 25 '15  
 See also Abrasives; Emery wheels; Grinding wheels; Machine shop practice

**Grinding machines**

- Attachment for grinding curved knives. II diag Iron Age 95:616 Mr 18 '15  
 Bealy wide-face ring wheel grinder. II diag Mach 22:242-3 N '15  
 Boring and grinding attachment. II Iron Tr R 56:1106 Je 3 '15  
 Brown & Sharpe plain grinding machine. II diag Mach 21:675-6 Ap '15  
 Car wheel grinder. II Ry Age (Mech ed) 89:143-4 Mr '15  
 Carwheel grinding machine. II Iron Age 94:1485 D 31 '14  
 Cincinnati rifle barrel grinding machine. diag Mach 22:250-1 N '15  
 Combination precision internal grinder. II Iron Tr R 56:1118 Ja 3 '15  
 Diamond shear grinding machine. II Mach 21:754-5 Mr '15  
 Disk and surface grinding machine by the Walker grinder company, Worcester, Mass. II Iron Age 94:1489 D 31 '14  
 Electric grinder for wood working shop. II Iron Tr R 57:398 N 4 '15  
 Electric rail grinder. II Sci Am 113:49+ Ji 10 '15  
 Face grinding machine with magnetic chuck. II Iron Age 95:948 Ap 29 '15  
 Ford-Smith shrapnel shell grinder. II Mach 22:68-9 S '15  
 Gardner heavy disk grinding machine. II Iron Age 96:480 Ag 26 '15; Iron Tr R 57:444 S 2 '15; Mach 22:65-6 S '15  
 Grinding, a manufacturing process; a plea for the substitution of grinders for lathes on certain classes of work. H. W. Dunbar. Iron Tr R 56:917-18 My 6 '15  
 Grinding large shells and projectiles. C. O. Smith. II diag Iron Age 95:445-7 F 25 '15  
 Grinding practice. C: G. Smith. Mach 21:469 F '15  
 Hand-operated hole grinding machine. II Iron Age 95:511 Mr 4 '15  
 Heavy grinding machine: use of a special gear box with a ball clutch to vary speeds and feeds. II Iron Age 94:1526-7 D 31 '14  
 Inexpensive wheel grinder. diag Elec Ry J 45:1175 Je 19 '15  
 Inserted-tooth saw grinding machine. II Iron Age 96:467 Ag 26 '15  
 Internal grinding machines used, methods of handling and examples of work. D. T. Hamilton. II diag Mach 21:983-98 Ag '15  
 J. N. Lapointe broach grinder. II Mach 21:513 F '15  
 Large crank-shaft grinding machine. II diag Engineer 120:178 Ag 20 '15  
 Machinery for the production of projectiles. II diag Engineer 120:278 S 17 '15  
 Modern grinding machines. II Mach 21:415-16 Ja '15  
 New plain grinding machine. II diag Iron Age 95:734-5 Ap 1 '15  
 Persons-Arter model A rotary surface grinder. II diag Mach 21:933-6 Ji '15  
 Persons-Arter rotary surface grinding machine. II Iron Age 96:11 Ji 1 '15  
 Plain and surface grinding machine. II Iron Age 96:1240 N 26 '15  
 Plain cylindrical external grinding. D. T. Hamilton. II diag Mach 21:861-82 Ji '15  
 Portable cylinder grinding machine. II Iron Age 96:400 F 13 '15  
 Portable pneumatic grinding machine. II Iron Age 96:83 Ji 8 '15; Iron Tr R 57:4 Ji 1 '15  
 Precision grinding machine. II Iron Tr R 56:284-5, 287 F 4 '15  
 Rivett internal grinding machine. II Mach 21:598-9 Mr '15  
 Self-contained grinding machine. II Ry Age (Mech ed) 89:91-2 F '15  
 Special grinding pattern shop machine. II Iron Age 96:198 Ji 22 '15  
 Special-purpose grinding machine: standard type of the Norton grinding company. II Iron Age 95:86-7 Ja 7 '15  
 Surface grinding; methods of grinding plane surfaces on reciprocating and rotary surface grinding machines. D. T. Hamilton. II diag Mach 22:33-42 S '15  
 Tolford ball grinding machine. C. L. Lucas. II diag Mach 21:311-14 D '14  
 Upright surface grinding machine. II Iron Age 96:7 Ji 1 '15



**Grinding machines—Continued**

Walker rotary disk and surface grinder. *Il* diags Mach 21:417-19 Ja '15  
Wide face ring wheel grinding machine. *Il* Iron Age 96:972 O 28 '15

See also Grinding wheels

**Safety devices**

Abrasive wheel safety code. *Iron Tr R* 56:171-3 Ja 21 '15  
Code for the use of abrasive wheels. *Iron Age* 96:216-17 Ja 21 '15  
Grinding safety devices. *C: G. Smith. Iron Age* 94:1392 D 17 '14  
Grinding wheel protection. *El. T. Spidy. diags Ry Age (Mech ed)* 89:249 My '15  
How state laws compel removal of dust. *H. C. Estep. Il Foundry* 43:43-51 F '15; *Same. Iron Tr R* 56:415-22 F 25 '15  
Proposed grinders' safety code. *Mach* 21:460-2 F '15  
Safety code for abrasive wheels. *Ind Eng* 15:23-4 Ja '15

**Grinding wheels**

Grinding wheel truing devices; attachments for holding and methods of applying diamond tools. *D. T. Hamilton. Il Mach* 22:220-8 N '15  
Grinding wheels; history and description of various abrasive compounds. *W. C. Gold. Metal Ind n s* 13:450-2 N '15  
How grinding wheels operate. *G. I. Alden. Iron Tr R* 55:1141-2 D 17 '14  
Operation of grinding wheels in machine grinding. *G. I. Alden. diags Mach* 21:307-9 D '14; *Abstract. Am Soc M E J* 37:16-17 Ja '15  
Practical details about grinding. *C: G. Smith. Iron Tr R* 57:443-4 S 2 '15  
Selecting grinding wheels for foundry use. *C. F. Dietz. Foundry* 43:115-20 Mr '15; *Same. Iron Tr R* 57:314-18+ Ag 12 '15  
Selection of grinding wheels; abrasives, processes of manufacture, bonds—choosing grade and grain for grinding under varying conditions. *D. T. Hamilton. Il diags Mach* 22:118-29 O '15  
Selection of wheels for cylindrical grinding. *C. H. Norton. Mach* 21:368 Ja '15  
Why your grinding wheel breaks. *Foundry* 43:104 Mr '15

See also Emery wheels

**Safety devices**

See Grinding machines—Safety devices

**Grizzlies**

New types of grizzlies. *Il Eng & Min J* 99:241-2 Ja 30 '15  
Rocker and grizzly mining on the north Saskatchewan. *J. A. Macdonald. diags Eng & Min J* 100:187-8 J1 31 '15

**Groins**

Coast erosion and protection on Long Island and New Jersey. *G. O. Case. Il diags Eng N* 74:439-42 S 2 '15  
Design suggested for shore-protection works on the New Jersey coast. *B. F. Cresson, Jr. diags Eng N* 73:904-5 My 6 '15; *Eng Rec* 71:547-8 My 1 '15

**Ground anchor**

Coghlin ground anchor. *Il Ry R* 56:182 Ja 23 '15

Ground temperature. See Earth temperature

Grounding. See Electric distribution

Group insurance. See Insurance, Life

**Grouting**

Astoria tunnel under the East river for gas distribution in New York city. *J: V. Davies. Il map Am Gas Light J* 108:225-30, 244-7+ O 11-18 '15

Cutoff-wall and rock grouting at the Milton reservoir embankment. *Il diags map Eng N* 73:468-71 Mr 11 '15

Deep tunnel completed in unsound rock solidified by extraordinary grouting. *Il Eng Rec* 72:417-19 O 2 '15

Flooding and recovery of the Astoria tunnel. *El. Carpenter. Il diags Eng N* 74:673-8, 736-41 O 7-14 '15

Granite block repaving in Worcester. *C. D. Pollock. Il Munic J* 39:541-3 O 7 '15

Grouting a leaking tunnel. *Il Eng Rec* 71:60 Ja 1 '15

Grouting as a method of engineering construction. *Eng & Contr* 43:21-3 Ja 13 '15

Grouting equipment for city tunnel, Catskill aqueduct. *W. E. Spear. diags Eng N* 73:894 My 6 '15

Grouting foundations for gravity-section dam. *H. S. Johnston. diags Eng Rec* 70:650-1 D 12 '14

Grouting or cushioning stand pipe bases; abstracts. *C: W. Sherman. Munic J* 39:312 N 25 '15; *Eng & Contr* 44:410-11 N 24 '15

March-Capron mixer for concrete grouting. *Il Munic J* 39:160 J1 29 '15

Method and cost of grouting a water bearing fissure and seamy rock in sinking a mine shaft. *J. R. Belgart. diags Eng & Contr* 44:353-5 N 3 '15

Methods and costs of grouting brick pavements. *diags Eng & Contr* 44:302-4 O 20 '15

Methods and costs of grouting granite block pavement. *Eng & Contr* 44:350-1 N 3 '15

**Guarantees**

Litigation courted by express guarantees. *El. J. Buckley. Metal Work* 83:212 Ja 29 '15

**Guard rails**

B. R. & P. standard guard rail. *diag Ry Age* 58:1072 My 21 '15

Frog guard rails of special design. *Il diags Eng N* 72:1292-3 D 31 '14

New cast-steel clamp for guard-rails. *diag Eng N* 72:1161 D 10 '14

**Guard rails (for highways)**

Comparative costs of guard rail and wide fills on highways. *diags Eng N* 74:79-80 J1 8 '15

Modification of the New York standard guard rail providing concrete posts. *El. B. Smith. diags Eng & Contr* 43:106 F 3 '15

Patented concrete guard rail. *diag Eng N* 74:1056 N 25 '15

**Guerrière (warship)**

Fight between the Constitution and the Guerrière. *Il Sci Am* 113:14-15 J1 3 '15

Gulford, Baltimore, Md.

**Architecture**

Houses of Gulford, Baltimore, Md.; views and plans. *Brickb* 24:223-7, pl 124-35 S '15

**Gulf of Mexico**

Cause and prevention of storm erosion on Gulf coast. *G. O. Case. Il Eng N* 74:1072-5 D 2 '15

**Gulf stream**

Causes that govern its course, and its effect on climate. *Sci Am S* 73:383-4 D 12 '14

**Gulflight (tank ship)**

Repairing the Gulflight. *Il Sci Am* 113:318 O 9 '15

Torpedo damage to the oil tanker Gulflight. *Il Int Marine Eng* 20:520-1 N '15

**Gums and resins**

Contributions of the chemist to the naval stores industry. *J: E. Teeple. J Ind & Eng Chem* 7:931-2 N '15

Fossil resins in coal. *Colliery* 35:521-2 My '15  
Naval stores industry. *A. W. Schorger and H. S. Betts. diags Il pls maps U S Agric Bul* 229:1-58 '15

Pontianak (Jellutong) rubber resin. *C. Ellis and A. A. Wells. J Ind & Eng Chem* 7:747-50 S '15

Synthetic resins: non-inflammable substitutes for celluloid and rubber. *Il Sci Am* 112:36 Ja 23 '15

Use of ammonium hydroxide for the extraction of rosin from wood. *H. K. Benson and H. N. Crites. J Ind & Eng Chem* 7:918-20 N '15

See also Balata.

**Gun. See Guns****Gun carriages**

Rapid-fire field-gun carriages; development of devices for absorbing the shock of recoil. *diags Eng M* 50:118-19 O '15

**Gun cotton**

Manufacture of gun cotton. *L: J. Matos. Textile World* 49:503-8 Ag '15

**Gun metal**

Influence of various temperatures on the properties of admiralty gun metal; abstract. *A. Campion and J: G. Longbottom. Am Soc M E J* 27:356-7 Je '15

- in powder. See Gunpowder
- In-primers**  
Gun-primers and detonators. Sci Am S 80:36 J1 17 '15
- un recoil**  
Machining recoil cylinders for big guns. H. B. McDermid. diags Mach 21:1010-11 Ag '15  
Method for calculating that part of the recoil momentum of a gun which is due to the action of the gases after the projectile leaves the muzzle. W: S. Franklin. J Fr Inst 179:559-77 My '15  
Rapid-fire field-gun carriages; development of devices for absorbing the shock of recoil. diags Eng M 50:118-19 O '15  
Recoil mechanism of modern guns. Il Sci Am 118:296-7 O 2 '15
- unite**  
Concrete lining for steel bunkers. Il Power 40: 812 D 8 '14  
Experience with cement guns in levee revetment. W. G. Caples. Eng & Contr 44:397-8 N 17 '15  
Gunite casing on wood shaft lining. S. Royce. Il diags Eng & Min J 99:409-11 F 27 '15  
Gunite concrete encasement. diags Ry R 56: 129-30 Ja 23 '15  
Interlining a timber and steel lined shaft with a cement gun. S. Royce. diags Eng & Contr 44:278 O 6 '15  
Preventing corrosion of steel substructure of the Cortlandt street ferry terminal of the Pennsylvania in New York city. Ry Age 58: 852 Ap 16 '15
- gunnery**  
Accuracy of gun fire. H. J. Jones. Engineer 120:239-40 S 10 '15  
Gunnery aboard ships. A. Keller. Sci Am S 80:309 N 13 '15  
Rifles and mortars. Il diags Sci Am 111:472-3 D 5 '14  
See also Artillery; Guns; Projectiles; Range finding; Target practice
- Gunning-copper method**  
Comparison of the Gunning-copper method with the Kjeldahl-Gunning-Arnold method for the determination of nitrogen. O. F. Jensen. J Ind & Eng Chem 7:38-9 Ja '15
- Gunpowder**  
Old-fashioned gun powders. Sci Am 113:415+ N 6 '15  
What happens when gunpowder explodes. Sci Am S 79:246 Ap 17 '15  
See also Ammunition; Smokeless powder
- Guns (ordnance)**  
Actual and theoretical ranges of the United States coast defense guns. Sci Am 112:472 My 22 '15  
British quick-firing field gun. diags Sci Am S 80:133 Ag 28 '15  
Cost of munitions of war. Mach 21:405 Ja '15  
European war from an engineer's standpoint. J. B. C. Kershaw. Il Eng M 40:43-50 Ap '15  
French howitzers. Il diags Engineer 118:563 D 11 '14  
Gun and the aeroplane. B. Young. Il Sci Am S 80:276 O 30 '15  
Increasing the range of our coast defense guns. Sci Am 113:159 Ag 21 '15  
Lesson of the Queen Elizabeth. Sci Am 112: 263 Mr 20 '15  
Lewis light magazine gun. Sci Am 112:131 F 6 '15  
Machine-gun and its development. N. Truslow. Il Sci Am 113:464+ N 27 '15  
Making of large guns. diags Sci Am S 79:115 F 20 '15  
Maxim machine gun and its construction. Il Sci Am 112:130 F 8 '15  
Range of a quick-firing field gun. Il Sci Am 113:93 J1 31 '15  
Soixante quinze, The. diags Engineer 119:77-8 Ja 22 '15  
Wire-winding big guns for Uncle Sam. C. L. Lucas. Il Mach 21:529-31 Mr '15; Same. Sci Am S 79:332-3 My 22 '15  
See also Ammunition; Artillery; Gun recoil; Mortars (ordnance); Naval guns
- Guns, Naval. See Naval guns**  
Gusset-plate diagram. W. M. Elliot. Eng N 73: 940 My 13 '15
- Gutters**  
Advantages and disadvantages of the single gutter pavements. W. G. Kirchoffer. Eng & Contr 44:190-1 S 8 '15  
Concrete and cast iron blocks for bridge gutter pavement. Il Munic Eng 49:62 Ag '15  
Concrete curb and gutter as constructed in Denver, Colo. E. B. Van de Greyn. Il Munic Eng 48:16-18 Ja '15  
Construction details and costs. Munic J 38: 153-9 F 4 '15  
Curb and gutter in cities and counties, 1915; tabulation. Munic Eng 48:262-4 Ap '15  
Street and sidewalk improvement in the United States and Canada; tabulation. Munic Eng 48:352-8 Je '15  
Street with a single gutter. W. G. Kirchoffer. Good Roads n s 9:138 Ap 3 '15; Same. Eng & Contr 43:229-30 Mr 10 '15  
See also Pavements
- Gutters (roof)**  
Making molded gutter in country shop. diags Metal Work 82:825-6 D 25 '14  
Sheet metal gutter construction problems. diags Metal Work 83:700-1, 734 My 14-21 '15
- Gymnasiums**  
Gymnasium for an industrial school at Fishkill-on-Hudson, N. Y. Il diags plan Bldg Age 37:19-25 S '15
- Gypsum**  
Gypsum as a fireproof material. H. G. Perring. Munic Eng 48:73 Ja '15  
Gypsum block in the Edison fire. S. G. Webb; V. G. Marani. Eng Rec 71:38 Ja 16 '15  
Miocene age of Dodge gypsum. C: R. Keyes. Eng & Min J 100:466 S 18 '15  
Occurrence of anhydrite in the United States. A. F. Rogers. Il Sch Mines Q 36:139-42 Ja '15  
Use of gypsum for fire protection. V. G. Marani. Eng M 48:596-8 Ja '15
- Gyro-compass**  
New gyroscopic compass. K. Scott. Met & Chem Eng 12:786 D '14
- Gyroscope**  
Electric stabilizer for steamships. Elec R & W Elec'n 67:290-1 Ag 14 '15  
Electrically driven gyroscope in marine work. H. C. Ford. Il Am Inst E E Pro 33:873-87 Je '14; Same. Sci Am S 78:268-9, 284-5 O 24-31 '14; Same cond. Eng M 47:311-13 S '14  
Discussion. Am Inst E E Pro 33:1890 D '14  
Gyroscopic phenomena. B. L. Newkirk. diags Sci Am S 79:850-1 Je 12 '15  
Gyrostats and their lessons. Sci Am S 79: 233-9 Ap 10 '15  
See also Gyro-compass; Gyrotelescope Unicycles
- Gyrostatics**  
Gyrostatic action. J. G. Gray. Il diags Sci Am S 79:172-3, 188-9 Mr 13-20 '15  
Lord Kelvin's work on gyrostatics; with discussion. A. Gray. Il Inst E E J 53:277-30 F 15 '15
- Gyrotelescope**  
Gyroscopic indicator for airships. C. Dienstbach. Il Sci Am 113:363+ O 23 '15

## H

- Hahn, Otto H., 1845-1915  
Sketch. por Eng & Min J 100:362 Ag 28 '15
- Hair**  
Sudden turning grey of the hair. Sci Am S 8: 288 O 30 '15
- Hair cloth**  
Dyeing hair cloth. Il Textile World 49:348 Je '15
- Halides**  
Method for the titration of small amounts halides. F. C. McLean and D. D. Van Slyk. Am Chem Soc J 87:1128-34 My '15

**Halifax, Nova Scotia****Public works**

New deep water pier at Halifax. A. F. Dyer. *II* Concrete Cem 7:7-13 J1 '15; Same cond. Eng N 73:1204-10 Je 24 '15

**Hall effect**

Application of the electron theory to various phenomena. J. P. Minton. Gen Elec R 18: 291-5 Ap '15

**Hallstead, Pennsylvania****Bridges**

Reinforced-concrete bridge with cantilever abutments. diags Eng Rec 70:622-3 D 5 '14

**Halogens**

Contributions to the knowledge of halogenation. R. L. Datta and S. D. Gupta. Am Chem Soc J 37:569-82 Mr '15

**Hamilton, Ontario****Sewerage**

West End sewage-treatment works, Hamilton, Ont. B. E. T. Ellis. diags plans Eng N 73:424-3 Mr 4 '15

**Water supply**

Reconstruction of the Hamilton, Ontario, water works. A. F. Macallum. Eng & Contr 44: 312-13 O 20 '15; Same. *II* Munic Eng 49:164-7 N '15

**Hammers**

Efficiency of forging hammers. C. H. Wackernagel. Mach 21:785 Je '15  
Handy soft hammer. diags Eng & Min J 100: 883 N 27 '15

Power hammer equipment. C. A. Tupper. Iron Age 96:112 J1 8 '15

Hammers, Electric. See Electric hammers

Hammers, Pneumatic. See Pneumatic hammers

**Hampton Institute**

Industrial education in the South. *II* Bldg Age 36:60-4 D '14; 37:67-9 Ja '15

Work of the Hampton institute. *II* Inland Ptr 56:379-80 D '15

Hand railing. See Railings

**Harbors**

Harbor development for Providence, R. I. plan Eng & Contr 43:sup21 Je 30 '15

Harbor developments at Toronto, Ont. Eng & Contr 43:sup21 My 26 '15

How \$80,000,000 is to be spent; allotment of appropriation to government river and harbor projects. Eng & Contr 43:sup24 Ap 14 '15

Improvement of San Francisco's water front. J. Newman. *II* diags Eng N 73:326-8 F 13 '15

Works for the improvement of navigable estuaries; abstract. L. Luiggi. Eng Rec 72:637-8 N 20 '15

See also Breakwaters; Buoys; Docks; Dredges; Dredging machinery; Freight handling; Piers; Ports; Terminals; Wharves

**Hardening**

Hardening iron and its alloys; abstracts. C. A. Edwards and H. C. H. Carpenter. *II* Iron Tr R 55:1222-6+; 56:130-4 D 31 '14, Ja 14 '15

Hardening of metals. Am Soc M E J 37:489-90 Ag '15

Hardening of metals: discussion at the Faraday society. *II* Engineer 118:503-5 N 27 '14; Met & Chem Eng 13:173-6 Mr '15

Two die and shell hardening furnaces. *II* Iron Age 96:79 J1 8 '15

See also Case hardening; Steel, Hardening of

Hardening of steel. See Steel, Hardening of

Hardie, James Keir, 1856-1915

Sketch. por Inland Ptr 56:197-9 N '15

**Hardinge mill**

Britannia linings for Hardinge mills. G. E. Collins. Met & Chem Eng 13:650-1 O 1 '15

Britannia tube-mill lining. *II* Eng & Min J 99:239-40 Ja 30 '15

Hardinge conical ball mill. *II* diag Metal Ind n 13:473 N '15

Hardinge mill data. A. F. Taggart. Am Inst Min E Bul 103:1385-76 J1 '15

**Hardness**

Brinell hardness and tenacity factors of a series of heat-treated special steels; discussion. A. McWilliam and E. J. Barnes. Met & Chem Eng 13:502-3 Ag '15

Brinell hardness testing of non-ferrous alloys. V. Skillman. Metal Ind n s 12:423-4 O '14; Same. Foundry 43:111-12 Mr '15

Comparison of hardness testing apparatus. Mach 21:364 Ja '15

Hand device for testing hardness. M. F. Turpin. Iron Age 96:923 O 21 '15

Measuring the hardness of rubber. *II* Iron Age 96:1393 Je 24 '15

Testing the hardness of iron castings. G. S. Evans. *II* diag Iron Age 96:8-10 J1 1 '15

Tool for hardness tests developed by L. Loewe & co. H. Friedmann. *II* Iron Tr R 57:899 N 4 '15

**Hardware**

British India; hardware lines. *II* U S Sp Cons Rep 72:215-31 '15

Electricity in hardware manufacturing. *II* Elec R & W Elec'n 66:301-6 My 1 '15

See also Bolts and nuts; Cutlery

Hardware association, National. See National hardware association

**Hardware shops**

Clearing the way for the season's business. *II* Metal Work 83:427-9+ Mr 19 '15

Combination shop can best serve community. *II* Metal Work 83:85-8+ Ja 8 '15

**Hardwood**

Northern hardwood forest; its composition, growth, and management. E. H. Frothingham. *II* map U S Agric Bul 285:1-79 '15

**Hartford, Connecticut****Water supply**

Addition to Hartford waterworks system augments daily supply by 80,000,000 gallons. *II* map Eng Rec 72:289-90 S 4 '15

Design and construction of the new supply conduit (Nepaug) of the Hartford water works. C. M. Saville. Eng & Contr 43:23-6 Ja 13 '15

**Hartford electric light company**

Electrical equipment and efficient features of new office building. *II* diag Elec W 65:206-9 Ja 23 '15

**Hartlepool**

Engineers and the Hartlepool raid. Engineer 118:610 D 25 '14

**Harvard club of New York**

Addition to the New York Harvard club. J. T. Boyd, jr. *II* diags Arch Rec 38:615-30 D '15

**Harvard university**

Dudley memorial gate; views. Brickb 24:255-6 O '15

Harry Elkins Widener memorial library; views and plans. Brickb 24:pl 106-11 Ag '15

Widener memorial library. *II* Arch & Bldg 47: 295-301 Ag '15

**Harvest disease**

Harvest disease due. Sci Am S 80:100 Ag 14 '15

**Harvesting machinery**

Harvesting grain by motor power. *II* Sci Am 112:612 Je 19 '15

Seventy years of inventions. *II* Sci Am 112:512, 514 Je 5 '15

**Manufacture**

Electricity in harvesting machinery works. *II* Elec R & W Elec'n 67:745-50, 888-8 O 23, N 13 '15

**Hats**

See also Panama hats

**Haulage**

Barney incline for hauling wagons out of pit. *II* Eng N 74:894 N 4 '15

Cart for rock quarries. G. B. Wilson. *II* Eng & Min J 99:385 F 20 '15

Centrally controlled electric haulage systems. F. E. Woodford. *II* Eng Soc W Fa 31:584-97; Discussion. 31:598-608 O '15

Gasoline locomotive hauls material trains for concrete highway. *II* Eng Rec 71:152 Ja 30 '15

**Haulage—Continued**

- Hauling heavy water pipes. E. C. Miles. *Il Munic J* 88:97-9 Ja 28 '15  
 Machinery for construction and maintenance, haulage of stone, etc. T. R. Agg. *Good Roads n s* 9:23-4 Ja 3 '15; Same. *Eng & Contr* 43:158-8 F 17 '15  
 Method of computing average haul of road material used by the New York highway commission. *Eng & Contr* 43:17-18 Ja 6 '15  
 Motor cars supplant horses in Vienna for drayage. L. Spängler. *Il Elec Ry J* 45:637 Mr 27 '15  
 Standard-gage railroad to haul road materials. *Il Eng Rec* 72:393 S 25 '15  
 Turntable aids road contractor in solving hauling problem. *Il Eng Rec* 72:303 S 4 '15  
 Wet concrete hauled from central plant on river. *Il Eng Rec* 71:469-70 Ap 10 '15  
*See also* Loading and unloading; Mine haulage; Motor trucks; Motor trucks in construction work; Railroads, industrial; Tractors

**Cost**

- Analysis of cost of hauling on country roads. *Eng N* 73:174 Ja 28 '15  
 Comparative cost of handling earth on flat and air dump cars. *Ry Age* 58:144 Ja 18 '15  
 Cost of handling material with motor versus horse-drawn equipment. H. F. W. Arnold. *Eng M* 50:28-32 O '15  
 Cost of motor-truck hauling depends on conditions. W. Collins, jr. *Eng N* 74:653 S 30 '15  
 Handling 400 tons of stone per day with auto trucks. *Eng Rec* 70:621-2 D 5 '14  
 Hauling gravel with motor truck and trailers; a service test in concrete road construction. *Il Eng & Contr* 42:536-8 D 9 '14  
 More use of motor trucks for hauling structural steel. D. P. N. Little. *Il diag Eng N* 74:554-5 S 16 '15  
 Motor trucks for heavy structural steel. W. Collins, jr. *Il Eng N* 74:174-6 J1 22 '15  
 Portable railway in highway construction. *Il Good Roads n s* 9:180-1 My 1 '15  
 Road building with industrial equipment: twelve-car train hauled by a 20-horsepower dinky. *Il Eng Rec* 70:621 D 5 '14  
 Trench spoil moved cheaply by tractor-trailer trains. *Il Eng N* 74:842-3 O 28 '15  
 Underestimating the cost of motor trucking. E. N. Bryan. *Eng & Contr* 43:210 Mr 10 '15  
 Utilization of the motor truck in highway work. *Il Good Roads n s* 9:171-9 My 1 '15  
*See also* Mine haulage—Cost

- Havana electric railway, light & power co., Havana, Cuba  
 Havana consolidated power plant. C. W. Ricker. *Il diag Power* 42:218-22, 257-61 Ag 17-24 '15  
 Havana—new power station. C. W. Ricker. *Il diag Elec Ry J* 45:920-5 My 15 '15; Same; with table of electrical equipment. *Elec W* 65:1233-40 My 15 '15; Abstract. T. C. Ulbright. *Sibley J* 30:3-10 O '15

**Hawaiian Islands****Sanitary affairs**

- Potable water supplies of the Hawaiian Islands. S. W. Tay. *Munic J* 38:104 Ja 28 '15

**Headache**

- Life-study of patients. G. M. Gould. *Sci Am* 79:226-7 Ap 10 '15

**Headframes**

- Steel headframe at no. 9 shaft, Republic mine, Vulcan, Mich. F. L. Burr. *Il plans Eng & Min J* 100:379-82, 430-5 S 4-11 '15

**Headgates. See Floodgates; Gates; Sluice gates****Headgear****See also Helmets****Heading machines**

- National bolt header. *Il Mach* 21:833-4 Je '15; *Iron Age* 95:1217 Je 3 '15; *Iron Tr R* 57:265 Ag 5 '15; *Ry Age (Mech ed)* 89:373-4 J1 '15

**Headlights**

- Incandescent headlights and projectors. P. S. Bailey. *Il Illum Eng Soc* 10:371-80 no 3 '15  
 Incandescent lamps for projectors. L. C. Porter. *Il Gen Elec R* 18:371-6 My '15  
 Pressed-steel headlight for interurban cars. *Il Elec Ry J* 46:1048-9 N 20 '15

**Headlights, Automobile. See Automobiles—Lighting****Headlights, Locomotive. See Locomotive headlights****Health boards**

- Co-operative health board. *Sci Am* 112:336 Ap 10 '15

**Health Insurance. See Insurance, Health****Health resorts**

- Cost of health-seeking. *Sci Am* 112:78 Ja 23 '15

**Heart**

- Instrumental study of the heart. *Il Sci Am* 112:630-1+ Je 26 '15

**Heat**

- Heat developed in crushing. J. Cook. *Eng & Min J* 99:976-8 Je 5 '15; Abstract. *Met & Chem Eng* 13:190 Mr '15

- Uses of intense heat and some of its applications to industrial processes. *Sci Am S* 80:243-4 O 16 '15

*See also* Boiling points; Calorimeters and calorimetry; Combustion; Evaporation; Fusion, Latent heat of; Heating; Insulation (heat); Melting points; Pyrometers and pyrometry; Radiation; Specific heat; Steam; Sun; Temperature; Thermochemistry; Thermodynamics; Thermometers; Waste heat

**Heat conductivity**

- Dissociation of hydrogen into atoms. I. Langmuir and G. M. J. Mackay. *Am Chem Soc J* 36:1708-22 Ag '14

- Temperature changes in wood under treatment. G. M. Hunt. *Eng Rec* 71:144-5 Ja 30 '15

- Thermal conductivity of refractories. B. Dudley, jr. *Met & Chem Eng* 13:315-16 My '15

**Heat engines**

- Efficiency of heat engines. (Engineers' study course) *Power* 41:136-7 Ja 26 '15

- Efficiency of heat engines. R. L. Wales. *Power* 42:17-18 J1 6 '15

- Heat-engine cycles. *Power* 41:173-5 F 2 '15

- Theoretical efficiency of heat engines. F. G. Gasche. *Power* 41:763-4 Je 1 '15

- Theoretical efficiency of heat engines. R. C. H. Heck. *Power* 41:534-6; 42:131 Ap 20, J1 27 '15

*See also* Boilers, Mercury; Gas and oil engines; Steam engines

**Heat radiation**

- Apparatus for the study of heat radiation. J. D. Hoffman. *Il Heat & Ven* 12:28-30 O '15

*See also* Heating—Tables, calculations, etc.

**Heat regulators**

- Foxboro temperature regulator. *Il Power* 40:823-4 D 8 '14

- Window displays boost regulator sales. *Metal Work* 83:46-8 Ja 1 '15

**Heat transmission**

- Analyzing heat flow; use of aluminum for automobile motor construction. E. H. Sherbondy. *Automobile* 33:384-5 N 4 '15

- Basis for rational design of heat transfer apparatus. E. B. Wilson. *Am Soc M E J* 37:546-9; Discussion. 37:549-51 S '15

- Coefficient of heat transmission in a pressed steel radiator; with discussion. J. R. Allen. *plans Am Soc Heat & V E* 20:86-93 '14

- Difficulty of measuring heat, with special reference to radiated and convected heat. A. H. Barker and F. C. S. Brendal. *Heat & Ven* 12:21-4 My; 33-4 Je '15

- Effect of radiator decoration. T. Tait. *Dom Eng* 72:341-2 S 18 '15

- Establishment of a standard for transmission losses from buildings of all constructions. R. P. Bolton. *Heat & Ven* 12:19-23 J1 '15; Same. *Dom Eng* 73:264-6 N 27 '15; Same cond. *Metal Work* 84:373+ S 17 '15

- Heat emitting capacity of radiation. C. D. Allan. *Heat & Ven* 12:32-4 Ag '15

- Heat from radiators under different temperatures. C. A. Fuller. *Heat & Ven* 12:32-5 Mr '15

- Heat losses by transmission through various building materials. L. A. Harding. *Am Soc Heat & V E* 19:208-13 '13

- Heat losses in steam transmission; abstract. W. L. Cathcart. *Am Soc M E J* 37:611 O '15

- Heat transmission and tube length in marine feed-water heaters; abstract. L. Loeb. *Am Soc M E J* 37:483-7 Ag '15

**Heat transmission—Continued**

Heat transmission capacity of a silica dish. W. K. Lewis. II diag J Ind & Eng Chem 7:410-14 My '15

Heat transmission with pipe coils and cast-iron heaters under fan blast conditions; with discussion. L. C. Soule. II plan Am Soc Heat & V E 19:391-411 '13

Heating data for varying conditions. J. A. Donnelly. Heat & Ven 12:28-33 J1 '15

Measurement of the efficiency of domestic fires, and on a simple and smokeless grate. A. V. Harcourt. II Am Soc M E J 37:419-20 J1 '15

Measurement of the temperature drop in blast-furnace hot-blast mains. R. J. Wyssor. diag Am Inst Min E Bul 106:2161-70 O '15; Abstract. Iron Age 96:869 O 14 '15

Notes on some recent researches. J. E. Petavel. diag Engineer 120:433-4 N 5 '15

Standard methods of proportioning direct radiation and standard sizes of mains. J. A. Donnelly. Dom Eng 72:366-8; 73:2-4 S 25-O 2 '15

Surface condenser; with discussion. C. F. Braun. diags Am Soc M E J 37:459-65 Ag '15

Tests on the heat transmission of direct radiators at low differences in temperature. J. A. Donnelly. diag Heat & Ven 11:36-7 S '14; Same. Am Soc Heat & V E 20:405-7 '14; Same. Dom Eng 68:65 J1 '14; Discussion. Heat & Ven 11:38-9 S '14; Discussion. Am Soc Heat & V E 20:408-11 '14

See also Heat conductivity; Heat radiation; Insulation (heat)

**Heat treatment**

Heat treatment of copper and brass. C. R. Hayward. II Metal Ind n s 13:275-7 J1 '15

Heat treatment of steel. See Steel, Heat treatment of

**Heaters**

Combustion of coal in domestic heaters. R. W. Davenport. Metal Work 83:928-9 Je 25 '15

Condensation in hot-blast heaters. J. D. White. Power 41:128 Ja 26 '15

Heat transmission with pipe coils and cast-iron heaters under fan blast conditions; with discussion. L. C. Soule. II diag Am Soc Heat & V E 19:391-411 '13

Heaters for fan work. C. L. Hubbard. Eng M 48:568-73 Ja '15

Problems in power-plant design. (Engineers' study course) C. L. Hubbard. Power 40:820-2 D 8 '14

See also Electric heaters; Gas heaters; Solar heaters; Water heaters

Heaters, Electric. See Electric heaters

**Heating**

Advance in heating and ventilating field. R. C. Carpenter. Metal Work 84:431-3 O 1 '15

American society of heating and ventilating engineers: twenty-first annual meeting, Jan. 20-22, 1915. Heat & Ven 12:39-48 F '15

Analysis of a combination heating system; with discussion. F. K. Chew. plans Am Soc Heat & V E 19:89-103 '13

Architect on modern ventilation ideas. C. S. Kaiser. Heat & Ven 12:45-6 S '15

Blower systems for heating and ventilating. A. M. Feldman. diags Dom Eng 69:257 N 28 '14; Same. Am Soc Heat & V E 20:412-15 '14

Can we locate the neutral zone in heated buildings? abstract. J. J. Blackmore. Am Soc M E J 37:560 S '15

Design of greenhouse heating plants. P. McKee. Metal Work 83:805; 84:44-6, 337 Je 4, J1 9, S 10 '15

Design of warm air heating systems. W. F. Colbert. Metal Work 83:219-20 F 5 '15

Designing of warm air heating systems. R. E. Lynd. plans Metal Work 83:192-7 Ja 29 '15

Developments and present problems in heating and ventilation. J. R. Allen. Am Soc Heat & V E 19:53-62 '13

Edison phonograph shop. C. E. Daniel. plans Heat & Ven 12:13-18 Ap '15

Electric fans in the winter: installed in the cold-air intakes of furnaces to increase temperature and reduce coal consumption. P. W. Gumaer. plans Elec W 65:229-31 Ja 23 '15; Abstract. Heat & Ven 12:46-7 S '15; Abstract. Ind Eng 15:79 Ag '15

Engineers show need of good ventilation. Metal Work 83:203-7+ Ja 29 '15

Future developments in heating and ventilation. A. H. Barker. Power 41:897-3 Je 29 '15; Abstract. Am Soc M E J 37:490-1 Ag '15

Heating a suburban house by furnace. II diags plans Bldg Age 37:19-26 Mr '15

Heating and ventilating conditions in large office building. C. E. A. Winslow and G. F. Maglott. Heat & Ven 12:26-31 F '15

Heating and ventilating in Germany. H. W. E. Muellenbach. Am Soc Heat & V E 20:186-96 '14

Heating and ventilating industrial plants. E. L. Hogan. Metal Work 83:263-5 F 13 '15; Same. Dom Eng 70:239-41 F 20 '15

Heating and ventilating practice in Sweden. H. Theorell. Am Soc Heat & V E 20:94-7 '14

Heating and ventilating stables and garages. C. L. Hubbard. diags Dom Eng 72:168-70 Ag 7 '15

Heating and ventilation of main floor and vestibules of the Lord & Taylor store. J. Graham. diags Dom Eng 72:282-3 S 4 '15

Heating and ventilation of offices and banking rooms. C. L. Hubbard. diags Brickb 23:307-10 D '14

Heating equipment of federal building, Denver. II Metal Work 84:247-9+ Ag 20 '15

Heating installations in private dwellings. R. E. Lynd. Metal Work 83:135-7 Ja 15 '15

Heating outfit adapted to an old house. II plans Metal Work 83:93-4 Ja 8 '15

Heating progress. S. R. Lewis. II Dom Eng 69:398-400 D 26 '14

Heating systems in the United Kingdom; open-grate fire vles with coal and wood stove. Metal Work 83:697-8 My 14 '15

Heating the skyscraper and its problems; abstract. W. H. Driscoll. Heat & Ven 12:44-5 Ja '15

Heating trade wants six-inch studs. Bldg Age 37:61 J1 '15

House heating in European countries. Metal Work 84:273 Ag 27 '15

Importance of a proper perspective. S. R. Lewis. Am Soc Heat & V E 20:249-52 '14

Inside circulation system in northern Maine. Metal Work 83:529-30 Ap 9 '15

Lecture course on elements of heating. C. A. Fuller. diags Metal Work 83:134-5, 209, 281-2, 338-9, 395-6, 460-1, 651-2, 686-7; 82:100; 83:927; 84:212-13, 303-4, 430-1, 553+ Ja 2, 30, F 13, 27, Mr 3, 27, My 15-22, J1 24 '14, Je 25, Ag 13, S 3, O 1, N 5 '15

Measurements for the household. U S Bur Stand Circ 55:55-67 '15

Merits of vapor systems for house heating. N. W. Taplin. Metal Work 83:475-6 Mr 26 '15

Modern practice in heating and ventilation. A. G. King. Dom Eng 68:2-4, 61-4, 182-3, 339-41; 64:37-9, 99-101, 122-4, 273-5; 65:2-4, 341-3, 365-8; 66:5-8, 231-4, 328-31; 67:190-2, 288-9+; 68:124-6; 69:354-5; 70:2-4, 268-9, 366-8; 71:2-3, 92-3, 182-4, 276-8; 72:2-4, 102-4, 310-12 Ap 5, 19, My 17, Je 21, J1 12, 26, Ag 2, S 6, O 4, D 13-20 '13, Ja 3, F 21, Mr 14, My 16, Je 6, Ag 1, D 19 '14, Ja 2, F 27, Mr 20, Ap 3, 24, My 15, Je 5, J1 3, 24, S 11 '15

Modern practice of recirculating air effects economy and makes satisfied customers. G. D. Crain, Jr. Metal Work 82:769 D 11 '14

Problems in power-plant design. (Engineers' study course) C. L. Hubbard. Power 40:820-2, 858-60, 894-7 D 8-22 '14

Progress of heating and ventilating art in the last decade. R. C. Carpenter. Sibley J 30:51-4 N '15

Regulating warm air furnace practice; tentative recommendations for a standard of procedure. Metal Work 83:646-8 Ap 30 '15

Saving fuel in heating a house. L. P. Breckenridge and S. B. Flagg. U S Bur Mines Tech Pa 97:1-33 '15; Same cond. (Firing various fuels in residence heaters). Metal Work 84:552-4, 584-6, 613-15 O 29-N 12 '15

Selecting equipment for heating system. Metal Work 82:828-9 D 25 '14

Successful warm air heating systems. J. H. Hussie. Metal Work 84:3+ J1 2 '15

Systems for the engineer and contractor. T. Barwick. Heat & Ven 11:27-34 N; 15-21 D '14; 12:18-22 Ja '15

**Heating—Continued**

Test of a hot blast air tube heating system. H. H. Lockwood and A. C. Staley. *diag Heat & Ven* 11:29-34 D '14

Tests of heating coils under fan blast conditions as conducted at Institute of thermal research, Buffalo, N. Y., July 13, 1913: report of committee. *Am Soc Heat & V E* 20:216-19 '14

Theory and practice in warm-air heating. *Metal Work* 83:661+. 772-3, 842-3; 84:47-8, 109-10, 184-5, 208-4, 242-3, 310-11, 329-4, 451-3, 558-9 *My* 7, 28, *Je* 11, *Jl* 9, 23, *Ag* 6-20, *S* 3-10, *O* 8, 29 '15

Theory and practice of heating and ventilating in France. G. Debesson. *diags Am Soc Heat & V E* 20:124-50 '14

Two-family house heated by furnace. *diags plans Bldg Age* 37:67-70 D '15

Warm air furnace in trying location. *11 plans Metal Work* 83:327-30 F 26 '15

Warm air heating for suburban residence. *11 plans Metal Work* 83:730-3 *My* 21 '15

Warming and circulating air in residence. *diags plan Metal Work* 83:255-6 F 12 '15

Wind leakage. F. K. Davis. *Heat & Ven* 12:48-9 *Ap* '15

*See also* Boilers, Heating; Car heating; Chimneys; Churches—Heating and ventilation; Electric heating; Fireplaces; Fuel; Furnaces, Hot air; Gas heating; Heaters; Heating apparatus; Heating contracts; Heating from central stations; Hot water heating; Hotels—Heating and ventilation; Radiators; Schoolhouses—Heating and ventilation; Solar heaters; Steam heating; Stoves; Ventilation; also Institute of heating and ventilating engineers

**Cost**

Cost of heating and ventilating systems. *Heat & Ven* 12:61-2 *Mr* '15

Expense of operating heating and ventilating plants; with discussion. H. M. Hart. *Am Soc Heat & V E* 19:308-27 '13

House heating with natural gas for fuel. F. R. Hutchinson. *11 Metal Work* 84:9-12+ *Jl* 2 '15

New York city heating costs. *Power* 42:236 *Ag* 17 '15

Records for two factory buildings and a Y. M. C. A. building. S. R. Lewis. *Heat & Ven* 12:20-2 *Ag* '15

**Estimates**

Estimate record blanks in book form. *Metal Work* 83:201 *Ja* 23 '15

Handy estimate sheet for heating work. *Metal Work* 83:151+ *Ja* 23 '15

**Laws and regulations**

Bill to regulate installation of heating systems before legislature in Massachusetts. *Dom Eng* 70:269-70 F 37 '15

Code regulations and furnace installation. F. K. Chew. *Metal Work* 83:908 *Je* 18 '15

Features of nineteen typical heating franchises. *11 Heat & Ven* 12:43-5 *Jl* '15

Heating ordinance of Cleveland, Ohio. V. D. Allen. *Dom Eng* 70:44-6, 72-4, 155-6 *Ja* 9-16, 30 '15

Importance of heating ordinances. S. H. Pool. *Dom Eng* 69:292-4 D 5 '14

Legislation affecting the heating industry. C. K. Foster. *Heat & Ven* 12:40-3 *Ag* '15

Omaha ordinance governing furnace work. *Metal Work* 84:330-1 *S* 10 '15

**Rates**

*See* Hot water heating—Rates

Tables, calculations, etc.

Air changes and direct radiation. *Dom Eng* 78:108-9 O 23 '15

Can we locate the neutral zone in heated buildings? J. J. Blackmore. *diags Heat & Ven* 12:27-32 N '15

Chart for direct-heating requirements. A. M. Daniels. *Power* 42:89-90 *Jl* 20 '15

Computing heating surface for brooder house. *Metal Work* 84:391+ *S* 24 '15

Condensation in hot-blast heaters. J. D. White. *Power* 41:128 *Ja* 26 '15

Data on overhead steam heating. I. N. Evans. *Heat & Ven* 12:41-2 *S* '15

Design of indirect heating systems with respect to maximum economy of operation. F. L. Busey and V. H. Carrier. *Am Soc Heat & V E* 19:141-65 '13

Design of warm air heating systems. W. F. Colbert. *Metal Work* 83:219-20 F 5 '15

Designing of warm air heating systems. R. E. Lynd. *Plans Metal Work* 83:192-7 *Ja* 29 '15

Drill room. University of Illinois, requires 23,000 square feet of direct radiation. G. B. Rice. *11 diags Heat & Ven* 12:13-23 *S* '15

Effect of time in determining radiation. J. R. Allen. *Heat & Ven* 11:23-7 F '14; Same; with discussion. *Am Soc Heat & V E* 20:112-23 '14

Engineering data for furnace heating; design of warm air systems now being based on thermal unit. A. C. Willard. *Metal Work* 83:604-6+ *Ap* 23 '15

Establishment of a standard for transmission losses from buildings of all constructions. R. P. Bolton. *Heat & Ven* 12:19-23 *Jl* '15

Same. *Dom Eng* 73:264-6 N 27 '15

Heat emission from radiators. E. D. Bottsford. *Heat & Ven* 12:49 *S* '15

Heat emitting capacity of radiation. C. D. Allan. *Heat & Ven* 12:32-4 *Ag* '15

Heat from radiators under different temperatures. C. A. Fuller. *Heat & Ven* 12:32-5 *Mr* '15

Heat loss test in a 200-room building. *Heat & Ven* 12:17-19 F '15

Heating data for varying conditions. J. A. Donnelly. *Heat & Ven* 12:28-33 *Jl* '15

Hot water heating radiation formula. N. J. Serrill. *Metal Work* 84:305 *S* 3 '15

How to figure radiation for steam and hot water heating. *Dom Eng* 73:209-10 N 13 '15

Lecture course on elements of heating. C. A. Fuller. *diags Metal Work* 83:927 *Je* 25 '15

Modern practice in heating and ventilation. A. G. King. *diags Dom Eng* 72:2-4 *Jl* 3 '15

New friction head slide rule for heating work and power piping. *diags Heat & Ven* 12:50-1 *Ap* '15

New pipe chart and tables based on square feet of radiation. T. W. Reynolds. *Heat & Ven* 12:22-5 N '15

Problem of figuring radiation. *Dom Eng* 73:107-8 O 23 '15

Records for two factory buildings and a Y. M. C. A. building. S. R. Lewis. *Heat & Ven* 12:20-2 *Ag* '15

Rules for figuring hot water radiation. A. J. Lowndes. *Metal Work* 84:318-19, 674 N 12, 26 '15

Rules for figuring radiation and sizes of mains. *Dom Eng* 72:320 *S* 11 '15

Rules for warm-air furnace installation. *Metal Work* 84:489-91 O 15 '15

Short method calculating glass surface. E. M. Shealy. *Dom Eng* 73:286 *S* 4 '15

Size of fire pot. *Metal Work* 84:561, 620-1 O 29, N 12 '15

Standard methods of proportioning direct radiation and standard sizes of mains. J. A. Donnelly. *Dom Eng* 72:366-8; 73:2-4 *S* 25-O 2 '15

Suggested formula for calculating the necessary amount of radiation for heating rooms by hot water, particularly applicable to the heating of all-gas kitchens, by hot water from a furnace coil or a water heater; with discussion. J. A. Donnelly. *Am Soc Heat & V E* 20:294-8 '14

Theory and practice in warm-air heating. *Metal Work* 83:772-3; 84:47-9, 109-10, 184-5, 208-4, 242-3, 461-8, 558-9 *My* 28, *Jl* 9, 23, *Ag* 6-20, *O* 8, 29 '15

Time analysis in starting heating apparatus; with discussion. R. C. Taggart. *Am Soc Heat & V E* 19:292-308 '13

Trunk-line system heats Michigan bungalow *11 plans Metal Work* 84:436-7 O 1 '15

Variation of temperature at different room levels in furnace testing. R. L. Lynd. *Heat & Ven* 12:47-8 *My* '15

Warm-air trunk line system for residence. *1 plans Metal Work* 84:647-8 N 19 '15

*See also* Heating pipes; Steam flow

**Terminology**

Air return systems as a standard designation. *Heat & Ven* 12:50 *Ag* '15

- Heating and ventilating engineers, American society of.** See American society of heating and ventilating engineers
- Heating apparatus**  
Heating devices at Panama exposition. Metal Work 83:871-2 Je 13 '15  
Time analysis in starting heating apparatus; with discussion. R. C. Taggart. Am Soc Heat & V E 19:392-308 '13  
See also Heaters
- Heating boilers.** See Boilers, Heating
- Heating contracts**  
Responsibility under contract for fixtures and plumbing. Dom Eng 70:40 Ja 9 '15
- Heating engineers**  
Definite recommendations for improving the status of the heating engineer. Heat & Ven 12:21-7 O '15
- Heating from central stations**  
Central heating with forced hot water. II plans Metal Work 84:139-40+, 177-8 JI 30-Ag 6 '15  
Combination electric heating plant, Laramie, Wyo. A. E. Anderson. II Power 42:802-5 N 2 '15  
Commercial end of the heating business. C. F. Oshman. Metal Work 84:392-4 S 24 '15  
District heating. S. M. Bushnell and F. B. Orr. plans maps Heat & Ven 12:37-37 Ja; 32-7 F; 36-42 Mr; 37-41 Ap; 38-41 My; 28-33 Je '15  
District-heating service and sales. Elec W 65:1578-7 Je 12 '15  
District heating with open heater. T. Wilson. II plan Power 42:44-7 JI 13 '15  
Flexible central-heating system. H. A. Woodworth. plan Elec W 65:937 Ap 10 '15  
Hot water heating on a large scale; central heating plant for the State school of agriculture, Farmingdale, Long Island. II diag plans Heat & Ven 12:13-23 N '15  
Laying district heating service mains. Metal Work 84:459-61+ O 8 '15  
Locating overloaded sections in a central-heating system. H. A. Woodworth. Elec W 65:1123-4 My 1 '15  
National district heating association 7th annual convention. Elec R & W Elec'n 66:1117-20 Je 12 '15  
National district heating association 7th annual convention, Chicago, June 1-3. Heat & Ven 12:37-45 Je '15  
Power plant of the Hughes electric co. C. P. Larsen. II Power 41:734 Je 1 '15  
Trouble in combining two- and single-pipe systems. R. S. Hawley. diag Power 42:487-8 O 5 '15
- Heating industry**  
Annual congress of the trade. Dom Eng 69:415-35+; 70:13-15 D 26 '14, Ja 2 '15  
Classifying a heating system. J. A. Donnelly. Metal Work 84:57 JI 9 '15  
Goods that give service which draws trade. II Metal Work 83:27-36 Ja 1 '15  
Heating industry in Canada. N. A. Hill. Am Soc Heat & V E 20:365-9 '14; Same. Dom Eng 69:321-2 D 12 '14; Discussion. Am Soc Heat & V E 20:369-73 '14  
Manufacturers and aggressive sales seekers. II Metal Work 83:14-25 Ja 1 '15  
Where to dig for fall profits. II Metal Work 84:287-71 Ag 27 '15  
See also Furnace industry
- Heating pipes**  
Chart for determining size of pipe for gravity hot-water heating systems; with discussion. M. S. Cooley. Am Soc Heat & V E 19:377-80 '13  
Conduits and insulation for heating pipes. C. L. Hubbard. diag Dom Eng 72:252-3 Ag 28 '15  
Determination of pipe sizes for hot water heating systems. F. E. Giesecke. II diag Dom Eng 73:166-8, 201-4 N 6-13 '15  
Inadequate space for heater pipes. T. R. Brien. Metal Work 84:402 S 24 '15  
See also Furnaces, Hot air—Pipes and fittings; Steam pipes
- Heddles**  
Heddles for weaving broad silks. Textile World 50:213 N '15
- Hedfield, George, d. 1826**  
Old City Hall, Washington, D. C. H. F. Cunningham. II diag Arch Rec 37:268-73 Mr '15
- Heliotropism**  
Recent studies in the dynamics of living matter. D. W. Thompson. Sci Am S 80:301 N 6 '15
- Hellum**  
Notes on the noble gases. W. S. Andrews. Gen Elec R 18:226 Mr '15
- Hell Gate bridge.** See New York (city)—Bridges
- Helmets**  
Fibre helmet for welders. II Foundry 43:380 S '15  
Manufacture of steel helmets for the French soldiers. J. Boyer. II Sci Am 113:468-9 N 27 '15
- Hemicellulase**  
Starch-forming enzyme from malt: its action on the hemicelluloses and its commercial application to brewing. C. B. Davis. II J Ind & Eng Chem 7:115-18 F '15
- Hemlock**  
Eastern hemlock. El. H. Frothingham. II map U S Agric Bul 152:1-43 '15  
Test of long-submerged hemlock timber. T. R. Lawson. II Eng N 73:159 Ja 28 '15
- Hemp**  
Flax and hemp supply. C: R. Dodge. Textile World 48:475-8 F '15  
Growing hemp in America. C: R. Dodge. II Sci Am S 79:308-9 My 15 '15
- Hen houses.** See Poultry houses
- Heredity**  
Family resemblances. Sci Am S 80:331 N 20 '15  
Heads and tails and heredity. El. Borel. II diag Sci Am S 78:403-5 D 26 '14  
See also Plant breeding
- Herschel fall increaser**  
Latest design of the Herschel fall increaser. C. Herschel. Eng N 73:84 Ja 14 '15
- Hertzian waves.** See Electric waves
- Hetch Hetchy project.** See San Francisco—Water supply
- Hewitt, Peter Cooper, 1861—**  
Sketch. por Eng M 50:218-19 N '15
- Hexabromodiacetyl**  
Hexabromodiacetyl. C. L. Jackson and R. Adams. Am Chem Soc J 37:2522-36 N '15
- Hexyluracil**  
Researches on pyrimidines; the synthesis of 4-hexyluracil and its relationship to uracil-glucoside. T. B. Johnson. Am Chem Soc J 36:1891-9 S '14
- Hibbing, Minnesota**  
Plucking the goose as town policy. Eng & Min J 100:377-8 N 27 '15
- Hickory**  
Hickories, elm and ash trees. W. H. Miller. II Am For 21:719-29 Je '15  
Hickory trees threatened with destruction. J. J. Levison. II Am For 21:797-9 JI '15
- High buildings**  
Chicago's 1914 progress in building. II Bldg Age 37:46-8 F '15  
Foundation work and the skyscraper. Sci Am 112:560 Je 5 '15  
Heating the skyscraper and its problems; abstract. W. H. Driscoll. Heat & Ven 12:44-5 Ja '15  
L. C. Smith building, Seattle, Wash. II plan Arch & Bldg 46:471-5 D '14  
Problem of the high building. C: P. Warren. Sci Am S 79:368 Je 5 '15  
Wind stresses in the steel frames of office buildings. W. M. Wilson and G. A. Maney. tables III U Eng Exp Sta. Bul 80:1-88 '15  
See also Office buildings; also Equitable building, New York; Woolworth building, New York
- High schools**  
Recent tendencies in high school chemistry. R. H. Bradbury. J Fr Inst 130:449-61 O '15
- High temperature.** See Temperature, High

**Highway accounting**

- Cost keeping system for work performed by municipal forces of the Philadelphia bureau of highways. Eng & Contr 43:252-4 Mr 31 '15; Same cond. Eng Rec 71:360-1 Mr 20 '15
- Cost keeping system Oregon state highway commission. E. F. Ayres. Eng & Contr 44:349-50 N 3 '15
- Method of recording expenditures on account of maintenance, Pennsylvania highway department. W. R. Main. Eng & Contr 44:134 Ag 18 '15
- 1914 operations of the Philadelphia bureau of highways and street cleaning. Il Good Roads n s 9:131-5 Ap 3 '15
- Road-maintenance costkeeping in Pennsylvania. Eng N 74:250-3 Ag 5 '15
- Simplified system of town highway accounts. F. Buck. Munic Eng 43:56-7 Ja '15; Same cond. Eng Rec 70:534 N 14 '14
- Standard form for reporting costs of road construction. Eng & Contr 43:107 F 3 '15
- System of highway accounting. S. D. Gilbert. Eng & Contr 44:336-7 O 27 '15; Same. Good Roads n s 10:199-200 O 2 '15

**Highway administration**

- Application of the merit system to the appointment of road officials. P. S. Wilson. Eng & Contr 42:444 N 4 '14
- Automobiles versus horses in road-work supervision. E. W. James. Eng N 73:769 Ap 22 '15
- Co-operative road administration plan aided by post card bulletins. L. W. Allison. Eng Rec 71:143 Ja 30 '15
- Determination of the justifiable outlay for specific cases of highway improvement. C. Richardson. Good Roads n s 10:196-7 O 2 '15
- Discussion of the administrative and design features of highway bridge and culvert work. A. Marston. Eng & Contr 42:539-90 D 23 '14
- Economic factors all-important in rural highways. L. W. Page. Eng Rec 72:385 S 25 '15
- Educational field for state highway departments. J. I. Pratt. Eng & Contr 43:230-1 Mr 10 '15; Abstract. Eng Rec 70:611 D 5 '14
- Efficiency of highway organization. E. A. Stevens. Eng Rec 70:687-8 D 26 '14
- Engineering investigation of New York highway work. Eng N 73:737-8 Ap 22 '15
- Functions of the planning boards installed in the Bureau of highways and street cleaning, Philadelphia, Pa. W. H. Connell. Eng & Contr 44:187 S 3 '15; Same. Good Roads n s 10:168 S 11 '15
- Gains made by state management of road construction and maintenance. J. E. Pennybacker. Eng Rec 72:189-90 Ag 14 '15
- Good roads and the government. Sci Am S 78:390 D 19 '14
- Highway commission or highway commissioner? Good Roads n s 9:52 F 6 '15
- Highway department records. Munic J 38:434 Ap 1 '15
- Highway program of Cook county, Illinois. Il map Eng Rec 70:648-9 D 12 '14
- Highway superintendent of Cook county, Illinois, simplifies filing system. map Eng Rec 72:473-4 O 16 '15
- Highway work in Illinois. Il Good Roads n s 8:205-10 D 5 '14
- History and future of highway improvement. L. W. Page. Good Roads n s 10:189-91 O 2 '15
- How small communities may have good roads. L. W. Page. Il Sci Am 112:14-15 Ja 2 '15
- Inspection and cost record system used on road work in Cook county, Illinois. Eng & Contr 43:206-7 Mr 3 '15
- Inspection of state aid road construction in Wisconsin. J. T. Donaghey. Eng & Contr 42:462 N 11 '14
- Iowa state highway bridges not too heavy. Eng Rec 71:138-9 Ja 30 '15
- Need, preparation and utility of statistical records in a highway department. F. P. Farley. Eng & Contr 44:187-9 S 8 '15
- Organization and standards of the Pennsylvania state highway department. Il diags Eng & Contr 42:186-93 Ag 19 '14
- Organization and standards of the Wisconsin highway commission. Il diags Eng & Contr 42:398-403 O 28 '14

Organization and system in highway work. A. B. Fletcher. Good Roads n s 10:197-9 O 2 '15

- Organization, character of personnel, scope of work, and methods of operation and control of a large municipal highway department. W. H. Connell. Il map J Fr Inst 179:439-69 Ap '15
- Organization for and methods and cost of state aid road construction in Alabama. Il diags Eng & Contr 42:504-8 N 25 '14
- Organization of a state highway department. W. R. Jeffreys. Good Roads n s 9:238 Je 5 '15
- Organization of a state highway department; with discussion. J. N. Carlisle. Good Roads n s 9:53-6 F 6 '15
- Organization of road work under the Illinois highway commission. Il map Eng & Contr 43:468-72 My 26 '15
- Progress in highway administration. J. E. Pennybacker. Eng Rec 71:15-16 Ja 2 '15
- Progress of state management of public roads. J. E. Pennybacker. Eng & Contr 44:183 Ag 18 '15
- Relation of farm produce hauling to permanent road improvements. W. A. McLean. Eng & Contr 42:215-17 Ag 26 '14
- Road legislation and economics. J. E. Pennybacker. Eng & Contr 42:521-2 D 2 '14; Same cond. Munic Eng 43:49-50 Ja '15
- Road-maintenance costkeeping in Pennsylvania. Eng N 74:350-3 Ag 5 '15
- State road laws should centralize authority. A. N. Johnson. Eng Rec 72:361 S 18 '15
- Uniform system for highway statistics and data. H. E. Breed. Eng & Contr 44:233-6 S 22 '15; Same. Good Roads n s 10:257-9 N 6 '15
- Washington's state highways and highway department. W. R. Roy. Il Munic J 39:343-9 S 2 '15
- See also Highway accounting; Highway law; Roads—Maintenance and repair
- Highway bonds. See Roads—Finance
- Highway engineering**
- Promoting engineering work. B. K. Coghlan. Eng Rec 72:301-2 S 4 '15
- Short college courses in highway engineering or annual meetings of state associations of highway engineers; which is the better plan? Eng & Contr 43:45 Ja 20 '15
- See also Bridges; Pavements; Roads
- Highway law**
- Changes in the Illinois road law. Munic Eng 49:75-6 Ag '15
- Earth and gravel road construction and maintenance. I. O. Baker. Good Roads n s 9:71-3 F 6 '15
- Essentials of proper laws for highway work. A. N. Johnson. Good Roads n s 10:193-4 O 2 '15
- Essentials of proper laws for highway work. E. A. Stevens. Good Roads n s 10:191-3 O 2 '15
- Highway laws of the United States. Good Roads n s 10:81-97 Ag 7 '15
- Location and width of highways and the securing of rights-of-way. A. B. Fletcher. Eng & Contr 42:523-4 D 2 '14; Same cond. Eng Rec 70:563 N 21 '14
- Notes from state highway departments. Munic J 38:429-31 Ap 1 '15
- Provisions of the new highway law of Ohio. Eng N 74:492-4 S 9 '15
- State should deal directly with patentees of processes and materials in public work. S. Whinery. Eng Rec 72:73-4 Jl 17 '15
- Traffic; present tendencies, probable development and regulation. W. Dean. Good Roads n s 9:55-6 F 6 '15
- Wisconsin legislature makes changes in state highway laws. Good Roads n s 10:176-7 S 25 '15
- See also Automobiles—Laws and regulations; Highway administration; Jitney buses—Regulation; Road traffic; Street traffic
- Highway officials**
- Directory of state highway officials. Good Roads n s 10:17-20 Jl 3 '15
- See also American association of state highway officials



Highways. See Roads; Streets

Hill publishing company

Hill building: special building design for special use. *il* diag plans Eng N 73:1241-8 D 24 '14

Hippuric acid

Researches on hydantoin; the interaction of hippuric acid with thiocyanates. T. B. Johnson, A. J. Hill and B. H. Bailey. *Am Chem Soc J* 37:2406-16 O '15

Historic houses

Early architecture of the valley of the Rappahannock. F. C. Baldwin. *il* diag plans *Am Inst Arch J* 3:113-18, 231-40 Mr, Je '15

Hobbling

Hobbling operation performed on a Cleveland automatic. *il* diag *Mach* 21:524 F '15

Hobbling small gears on the milling machine. *diag Mach* 21:406 Ja '15

Hobs

Fawcett herringbone gear hobbing machine. *il* diag plan *Mach* 21:506-9 F '15

Lees-Bradner hyperboloid hob. *il* *Mach* 22:66-7 S '15

Results obtained with ground hobs. E. K. Hammond. *il* diag *Mach* 21:695-700 My '15

Hocking Valley railway

16th annual report. *Ry Age* 59:590-1, 626-7 O 1 '15

Hogs. See Swine

Holst towers

Portable hoist towers for concreting. *il* diag Eng N 72:1812-18 D 31 '14

Hoisting

Care and use of hoisting accessories: wire rope, manila rope, hooks, chains, accessories, lubrication of wire rope, strength of slings. *Mach* 21:297-8 D '14

Experiments to determine stresses in parts of rope falls. C. S. Adams. *Eng Rec* 72:425-6 O 2 '15

Heavy truck and rigging used to install 48-ton armatures. *il* *Eng Rec* 71:786 Je 19 '15

How a washed-out bridge-span was pulled out of a river. plan Eng N 73:634 Ap 1 '15

Outrigger on gin-pole saves time in erecting roof steel. W. H. Palmer. *diag Eng Rec* 71:310 Mr 6 '15

Riley safety wrecker yoke. *il* *Ry Age* (Mech ed) 89:547 O '15

Seventy-nine-ton derrick car lowers itself 50 feet in twenty-five minutes. A. S. Beale. *il* *Eng Rec* 72:78-9 Jl 17 '15

Skip with cable guides. J. Simmons. *il* *Eng & Min J* 100:516 S 25 '15

Special hoisting job. *il* diag Eng N 74:606-7 S 28 '15

Steel-wire hoisting ropes; rule for finding the load stress and the required diameter. F. W. Sperr. *Colliery* 35:806-7 Je '15

Use of slings in handling loads. diag Eng & Contr 42:388-9 O 7 '14

See also Crane hooks; Hoist towers; Mine hoisting

Hoisting machinery

Alternating-current coal hoist. R. E. Brown. *il* *Am Inst E E Pro* 34:615-22 Ap '15; Abstract, with discussion. *Elec R & W Elec'n* 66:781-2 Ap 24 '15; Discussion. *Am Inst E E Pro* 34:2895-914 N '15

Compact spud hoist eliminates costly equipment. *il* *Eng Rec* 72:879 N 27 '15

Electrical appliances for workshops. *il* diag *Engineer* 119:620-2; 120:40-1, 54-6 Je 25, Jl 9-18 '15

Erecting 40-ton girders at a height of 250 feet above the street. *il* diag Eng Rec 70:699-702 D 26 '14

Erecting 36-ton girders with steel shears. *il* *Eng Rec* 70:606 D 5 '14

Features of the electrical equipment for the Granite mountain hoist. G. B. Rosenblatt. *il* diag *Assn Eng Soc J* 54:199-209 My '15

French electric mine hoist. *il* *Colliery* 35:468-70+ Ap '15

Hamilton electric incline railway. *il* *Elec Ry J* 46:115-16 Jl 17 '15; Same. *Eng N* 74:49-51 Jl 8 '15; Same. *Ry R* 57:213-14 Ag 14 '15

Hamilton incline railway. *il* *Munic J* 39:41-2 Jl 8 '15

Hoist for reinforcing-steel. H. DaCamara. *diag Eng N* 73:395 F 25 '15

Hoist on revolving headframe operates drag-line. *il* diag plan Eng Rec 71:742-3 Je 12 '15

Line disturbance caused by special squirrel-cage and wound-rotor motors when starting elevators and hoists. J. C. Lincoln. *diag Am Inst E E Pro* 34:421-31 Mr '15; Discussion. 34:2847-50 N '15

Men and machinery of the Comstock—pioneer hoisting works. G. W. Dickie. *il* *Eng & Min J* 98:1130-4 D 26 '14

Rational basis of comparison of the duties of electrical elevators and hoisting engines. A. M. Coyle. *Am Soc M E J* 87:395-400 Jl '15

Theory of the bucket elevator. L. Kresser. *Eng & Min J* 100:478-9 S 18 '15

Using a pneumatic drill motor as a hoisting engine. V. T. Kropidowski. *diag Ry Age* 59:960 N 19 '15

See also Buckets; Cableways; Conveying machinery; Cranes, derricks, etc.; Electric shovels; Elevators; Lifting magnets; Mine hoisting; Mining machinery; Ore handling; Rope

## Control

Alternating-current controllers for steel mills. A. Simon. *diag Am Inst E E Pro* 34:748-9 My '15; Same. *Iron Tr R* 57:529 S 16 '15

Control of direct current hoists in iron and steel mills. G. E. Stoltz and W. O. Lum. *il* *diag Am Inst E E Pro* 34:723-9 My '15; Discussion. 34:2947-65 D '15

Direct-current control for hoisting equipment in industrial plants. W. T. Snyder. *diag Am Inst E E Pro* 34:695-710 My '15; Same (How to buy hoist controllers). *Iron Tr R* 56:871-4+ Ap 29 '15; Same cond. *Engineer* 120:208-10 Ag 27 '15; Abstract, with discussion. *Elec R & W Elec'n* 66:780-1 Ap 24 '15; Discussion. *Am Inst E E Pro* 34:2947-65 D '15

Direct-current hoist equipment in industrial plants; discussion at meeting of A. I. E. E. *Elec W* 65:1124 My 1 '15

Electric hoists for the Michigan iron country. *il* *Eng & Min J* 99:742 Ap 24 '15

Holding companies

Consolidation of balance sheets in holding company accounting. A. W. Wright. *J Account* 19:21-33 Ja '15

Holiday printing. See Christmas printing

Holidays

Misusing holidays. E. D. Murphy. *Iron Age* 95:512 Mr 4 '15

Hollow tile

Hollow-tile partitions and floor arches tested. *diag Eng Rec* 71:432 Ap 3 '15

Interlocking tower of stucco on hollow tile, Rock Island lines. E. G. Zorn. *il* diag *Ry R* 57:108-9 Jl 24 '15

Lateral strength of hollow-tile walls; tests at St. Louis. *il* diag Eng N 73:428-9 Mr 4 '15

Tile cottage with shingle roof. C. E. Anderson. *il* plans *Bldg Age* 37:19-24 O '15

Two-family house built of hollow tile. E. G. Zorn. *il* plans *Bldg Age* 37:47-52 Jl '15

Holmes, Joseph Austin, 1859-1915

Sketch. *por Iron Age* 96:171 Jl 15 '15; *Eng & Min J* 100:119 Jl 17 '15; *Eng N* 74:188-9 Jl 22 '15; *Sci Am* 113:82 Jl 24 '15; *Power* 42:134-5 Jl 27 '15; *Colliery* 36:42-3 Ag '15; *Met & Chem Eng* 13:519-20 Ag '15

Sketch. V. H. Manning. *por J Ind & Eng Chem* 7:712-15 Ag '15

Home market club

Annual meeting, Nov. 18, 1914. *Textile World* 48:302-4 D '14

Hominy

Lye hulling of corn for hominy. J. W. Marden and J. A. Montgomery. *J Ind & Eng Chem* 7:850-3 O '15

Hooke's law

Generalized form of Hooke's law. E. R. Hedrick. *Eng N* 74:542-3 S 16 '15

Hookworm disease

Rural school and the hookworm disease. *il* *Sci Am S* 79:164-5 Mr 13 '15

Hoover, Herbert Clark, 1874-

Sketch; abstract. W. Irwin. *Eng & Min J* 99:243-4 Ja 30 '15

**Horsepower**

Constants for converting electrical units to horsepower. C: S. Ohrenschild. Mach 21:794 Je '15

Power formulas used for taxation in different countries. Automobile 32:160-1 Ja 21 '15  
Relation of the horse-power to the kilowatt. Sci Am S 79:162-3 Mr 13 '15

See also Automobile engines—Horsepower

**Horses**

German war diet for horses. Sci Am 112:422-+ My 1 '15

**Horseshoes**

Manufacture of a toe calk for horse shoes. Il Iron Age 96:805 O 7 '15

**Horticulture**

Waste heat to stimulate plant growth. Sci Am 113:445 N 20 '15

**Hose**

Care of fire hose. Munic J 37:888 D 17 '14  
Woven fabric for fire hose. Il Textile World 49:426-6 Jl '15

**Hose couplings**

Coupling for compressed air hose. Il Iron Age 96:83 Jl 8 '15; Elec Ry J 46:194 Jl 31 '15; Foundry 43:329 Ag '15

Dimension standards for brass hose couplings. P. W. Blair. Metal Ind n s 13:111 Mr '15

National standard hose couplings and fittings for public fire service. Il diags U S Bur Stand Circ 50:1-23 '14; Summary. Sci Am S 79:304 My 8 '15

Standard hose couplings. Munic J 39:580 O 14 '15

**Hosiery**

Aniline black on cotton hosiery. E. C. T. Bick. Textile World 48:523-4 F '15

Garter loop stocking. Il diags Textile World 49:111-12 Ap '15

Improved stocking. diags Textile World 48:340-2, 617; 49:676-7 D '14, Mr, S '15

Manufacture of athletic hose. Il Textile World 48:418-20 Ja '15

Merchandising of hosiery and underwear. C. C. Parlin. Textile World 49:sup265-+ My '15

Paramount metal forms for hosiery. Textile World 48:339-40 D '14

Pointex full fashioned heel. diag Textile World 48:417-18 Ja '15

Reinforced knit fabric. diags Textile World 49:544-6 Ag '15

Removing stockings from boards. Il Textile World 50:104-6 O '15

Straight hosiery frame. diags Textile World 49:673-4 S '15

Thirty years' retrospect and prospect of hosiery. F. L. Chipman. Textile World 48:515-18 F '15

Weights of hosiery. Textile World 49:546; 50:109 Ag, O '15

**Hosiery machines**

Fancy hosiery on full fashioned machines. diags Textile World 49:674-5 S '15

Proctor automatic boarding, drying and stripping machine for hosiery. Il Textile World 49:282 My '15

Seamless stocking machine. W. T. Wallis. Sci Am 113:271 S 25 '15

**Hospital cars**

Ambulance train on a British railway. Il Eng M 48:876-8 Mr '15; Eng N 73:1203 D 17 '14

Exchange of severely wounded prisoners. Il Sci Am 113:285 O 2 '15

Turning French freight cars into hospitals. W. S. Hiatt. Il Ry Age 59:329-30 Ag 20 '15

War hospital cars in Germany. Il Elec Ry J 45:50-1 Ja 2 '15

See also Hospital trains

**Hospital ships**

Floating hospitals of Europe. A. Gradenwitz. Il Sci Am 113:298-9 O 2 '15

**Hospital trains**

How French hospital trains help to save the wounded. W. S. Hiatt. Il plans Ry Age 59:689-92 O 8 '15

See also Hospital cars

**Hospitals**

American hospital development. E: F. Stevens. Il plans Arch Rec 38:641-61 D '15

Highland private hospital, Fall River, Mass.; views and plans. Brickb 23:pl 180-1 D '14

Hospital signal-lighting system. diag Elec W 66:1219 N 27 '15

Importance of background in the operating theatre. B. Moynihan. Illum Engr 8:462 N '15

New General hospital at Cincinnati. J. R. Schmidt. Il plan Arch Rec 37:453-53 My '15

Practical suggestions for planning and equipment of hospitals. M. E. McCalmont. Il plans Brickb 24:67-70 Mr '15

Ward-cooling plant in a hospital. A. M. Feldman. Il plans Am Soc Heat & V E 20:74-9 '14; Same. Metal Work 81:336-8 F 27 '14; Same cond. Heat & Ven 11:21-3 F '14

Warren state hospital power plant. W. O. Rogers. Il diags plan Power 42:364-5, 408-12 S 14-21 '15

See also Convalescent homes; Tuberculosis, Hospitals and sanatoriums for

**Electric equipment**

Scottish hospital installation. Elec R & W Elec'n 67:337 Ag 21 '15

Wilkes-Barre hospital contract. Elec R & W Elec'n 66:199 Ja 30 '15

**Heating and ventilation**

Heating and ventilating hospital building. C: L. Hubbard. Il plans Metal Work 83:630-1 Ap 30 '15

Hospital ventilation from the engineer's point of view. A. K. Ohmes. Heat & Ven 11:22-7 D '14

Plumbing and heating in Burke home. Il plans Metal Work 83:595-8 Ap 23 '15

Plumbing and heating in Cincinnati hospital. K. C. Cardwell. Il plan Dom Eng 71:212-14 My 22 '15

**Sewerage**

Design, cost and operation of new sewage treatment plant at the state hospital, Warren, Pa. P. E. Mebus and F. R. Berlin. plans Eng & Contr 43:265-8 Mr 24 '15

**Hospitals, Factory**

Shop hospitals. Il Am Ind 15:sup1-4 Je '15

**Hospitals, Military**

American ambulances in the field. Il Automobile 32:266-9 F 11 '15

See also Hospital cars; Hospital ships; Hospital trains

Hot air engines. See Air engines

Hot blast stoves. See Blast furnace stoves

**Hot Springs, Arkansas**

Fordyce bath house. Il plans Brickb 24:283-4 N '15

Hot springs. See Springs

**Hot water heating**

Advantage of down-feed hot water heating. I. N. Evans. Heat & Ven 12:40 Ag '15

Auxiliary heating system. plan Dom Eng 73:208 N 13 '15

Central heating with forced hot water. Il plans Metal Work 84:139-40-+, 177-8 Jl 30- Ag 6 '15

Chart for determining size of pipe for gravity hot-water heating systems; with discussion. M. S. Cooley. Am Soc Heat & V E 19:377-90 '13

Combined heating and sprinkler system for a factory building; Wheelock, Lovejoy & co., Cambridge, Mass. C: L. Hubbard. Il plans Heat & Ven 12:13-17 O '15

Comfort in a country mansion. Il plans Metal Work 83:306-9 Je 4 '15

Determination of pipe sizes for hot water heating systems. F. E. Giesecke. Il diags Dom Eng 73:166-8, 201-4 N 6-13 '15

District heating with open heater. T: Wilson. Il plan Power 42:44-7 Jl 13 '15

Elizabeth hospital hot water heating plant. Heat & Ven 11:51-3 D '14

Flexible central-heating system. H. A. Woodworth. plan Elec W 65:337 Ap 10 '15

Forced hot water heating system. E. Lippe. diags Dom Eng 70:302-4 Mr 6 '15

Heat generators and velocity problems. Metal Work 82:759-+ D 11 '14

Heating a garage. plan Metal Work 84:16-17 Jl 2 '15

**Hot water heating—Continued**

- Heating greenhouses by hot water. G: W. Loeber. diags Dom Eng 70:399-401; 71:31-3, 124-6, 244-6, 362-6 Mr 27, Ap 10, My 1, 29, Je 26 '15
- Heating radiator from water back. *il* Metal Work 84:284 Ag 27 '15
- Heating system for a garage. plans Dom Eng 72:376 S 26 '15
- Hot water heating for mills. R. S. Parks. Textile World 50:240-3 N '15
- Hot water heating on a large scale; central heating plant for the State school of agriculture, Farmingdale, Long Island. *il* diags plans Heat & Ven 12:13-22 N '15
- Hot water heating radiation formula. N. J. Serrill. Metal Work 84:305 S 3 '15
- Hot-water heating system at Grand Central terminal. W. G. Carlton. Power 42:246-6 Ag 17 '15
- Hot water heating system for garages. *il* Dom Eng 72:228-9 Ag 21 '15
- Hot water radiators at boiler level. diags Metal Work 83:184-6 Ja 29 '15
- Locating overloaded sections in a central-heating system. H. A. Woodworth. Elec W 66:1123-4 My 1 '15
- Plumbing and heating in Burke home. *il* plans Metal Work 83:596-8 Ap 23 '15
- Rules for figuring hot water radiation. A. J. Lowndes. Metal Work 84:618-19 N 12 '15
- Suggested formula for calculating the necessary amount of radiation for heating rooms by hot water, particularly applicable to the heating of all-gas kitchens, by hot water from a furnace coil or a water heater; with discussion. J. A. Donnelly. Am Soc Heat & V E 20:294-8 '14
- Time element in heating a building. Heat & Ven 12:46-6 Mr '15
- Two hot water supply problems. diags Dom Eng 70:242-3 F 20 '15
- See also Radiators*

**Rates**

- New rate schedule for hot water heating in Toledo, Ohio. Heat & Ven 11:50-1 D '14

**Hot water supply**

- Barber shop hot-water system. plan Metal Work 84:486-7 O 8 '15
- Combination hot water supply and hot water heating system. diags Dom Eng 73:141 O 30 '15
- Connecting a range boiler to a tank heater and furnace coil. diags Dom Eng 72:288 S 4 '15
- Expansion in hot water supply pipes. *il* diags Metal Work 83:505-+ Ap 2 '15
- Explosion of hot-water tank. H. E. Collins. *il* diag Power 41:461-2 Mr 30 '15
- Hot water supply system. diags Dom Eng 73:170-1 N 6 '15
- Hot water supply system that will not circulate. diags Dom Eng 73:237-8 N 20 '15
- Methods of range boiler connections. diags Dom Eng 71:159-60 My 8 '15
- Pipe surface required for heating water. Power 41:209 F 9 '15
- Plumbing installation and sewage disposal. C: A. Whittemore. *il* plans Brickb 24:137-40 Je '15
- Question about hot water supply connections. plan Dom Eng 72:346-8 S 18 '15
- Range-boiler connections work right. diags Dom Eng 73:143 O 30 '15
- Range boiler installation. plans Dom Eng 73:74-5 O 16 '15
- Sediment deposits in stove waterbacks. *il* Metal Work 84:205-7 Ag 13 '15
- Unsatisfactory hot water supply system for barber shop. diags Dom Eng 72:289 S 4 '15
- Water becomes too hot in range boiler. plans Dom Eng 73:207-8 N 13 '15
- See also Electric water heaters; Gas water heaters; Water heaters*

**Hotels**

- Construction work on Traymore hotel, Atlantic City. *il* plan Eng N 74:80-1 Jl 8 '15
- From managers to ballrooms; Gedney Farm Hotel, White Plains, N. Y. W. H. Cooley. *il* Arch & Bldg 47:85-8 Mr '15
- Gedney Farms, White Plains, N. Y. Arch Rec 38:896 D '15

- Hotels and fires. E: R. Hardy. Arch & Bldg 47:126-8 Mr '15
- Reinforced-concrete frame of Hotel Traymore erected at rate of a floor a week. *il* plans Eng Rec 72:50-1 Jl 10 '15

**Designs and plans**

- Hotel building. *il* plans Arch & Bldg 47:104-25 Mr '15
- Hotel Statler, Detroit, Mich. Brickb 24:pl 50-3 Ap '15
- Hotel Statler, Detroit, Mich. *il* plans Arch & Bldg 47:89-101 Mr '15
- Hotel Statler in Detroit. W. S. Wagner. *il* plans Arch Rec 37:320-39 Ap '15
- Largest fireproof resort hotel in the world completed at Atlantic City. *il* diags Eng Rec 72:11-13 Jl 8 '15
- New Traymore hotel at Atlantic City. *il* diags Eng N 74:18-23 Jl 1 '15

**Heating and ventilation**

- Heating and ventilating modern hotels. N. L. Schloss. Power 42:212-13 Ag 10 '15
- Kitchen ventilation for a modern hotel; equipment of the Biltmore, New York. *il* diags plan Heat & Ven 12:13-18 Ja '15

**Lighting**

- Halation and hostilities. F. L. Godinez. Arch & Bldg 47:102-3 Mr '15

**Power plants**

- Former engineer of La Salle hotel defends his administration. J. E. Lawrence. Power 41:63-5 Ja 12 '15
- Large saving in Hotel La Salle plant. W. W. Bird. Power 41:99-101 Ja 19 '15
- New Morrison hotel plant, Chicago. T. Wilson. *il* plans Power 42:70-3, 111-15 Jl 20-27 '15
- Hours of labor
- Eight-hour day. C. J. Morrison. Eng M 50:363-6 D '15
- Hours of service act interpreted as to telephone communications. Ry Age 59:496-7 S 17 '15
- Many New England shops on shorter hours. Iron Age 98:350-1 O 7 '15
- Work-day shortened and output maintained in forge shop of Cleveland hardware company. Iron Age 95:537-8 Mr 4 '15

**House decoration**

- Diffusing media; interior furnishings. Illum Eng Soc 10:397-402 no 5 '15
- Recent interiors by Thornton Chard; views. Arch Rec 37:177-86 F '15
- Use of native woods for interior finish. C. M. Price. *il* Brickb 24:217-22, 239-42, 285-9 S-N '15
- See also Fireplaces; Mantles; Mural painting and decoration*

- House drainage. *See Drainage, House; Plumbing*
- House files. *See Files*

- Houses. *See Apartment houses; Architecture, Domestic; Cottages; Country houses; House decoration; Housing problem*

- Houses, Concrete. *See Concrete houses*

- Houses, Duplex. *See Duplex houses*

- Houses, Historic. *See Historic houses*

- Houses, Steel

- Steel frame houses for miners. *il* plans Colliery 35:566-8 My '15

- Housewiring campaigns. *See Electric service companies—Advertising*

**Housing problem**

- Canvastown for government employees in New South Wales. *il* Sci Am 112:479 My 22 '15
- Ellen Wilson Memorial homes to be erected at Washington. D. C. G: B. Ford. *il* plans Am Inst Arch J 3:362-7 Ag '15
- Factory city beautiful at low cost, Badin, N. C. *il* plans Iron Age 95:782-6 Ap 8 '15
- Housing and sanitation at Mineville. S. Leffevre. *il* diags plans Am Inst Min E Bul 98: 227-33 F '15
- Housing reform in Belgium. C. Aronovici. *il* Am Inst Arch J 2:563-72 D '14
- Housing reform in France. C. Aronovici. Am Inst Arch J 3:32-6 Ja '15

**Housing problem—Continued**

- Housing reform in Italy. C. Aronovici. *Am Inst Arch J* 3:89-93 F '15  
 Improvement in housing workmen; steps to be taken by Pennsylvania. *Bldg Age* 37:83 Mr '15  
 Industrial betterment. F. E. Cardullo. *Mach* 22:193-5 N '15  
*See also* Apartment houses; City planning; Garden cities  
 Houston, Texas

**Bridges**

- Design and construction of the San Jacinto street reinforced concrete bridge. *Il diags Eng & Contr* 42:492-5 N 25 '14

**Electricity supply**

- Co-operative lighting franchise. P. H. Sheldon. *Munic Eng* 48:41-3 Ja '15

**Railroads**

- Factors in grade separation. *Eng N* 73:422-3 Mr 4 '15

**Howitzers. See Guns (ordnance)****Hudson river**

- Long-term variations in stream flow, Croton and Hudson rivers. E. H. Sargent. *Eng N* 72:1119 D 3 '14

**Hughes induction balance**

- Detecting buried shells with induction balance. *Sci Am* 113:425+ N 13 '15  
 Use of the Hughes induction balance for locating bullets. *diag Elec W* 65:167 Ja 16 '15

**Hulling. See Corn****Humidity**

- Air conditioning; abstract. J. I. Lyle. *Am Soc M E J* 37:396 My '15  
 Air we breathe—a study of temperature, humidity and dust content. T. Hubbard. *Heat & Ven* 13:22-5 Ja '15  
 Control of humidity in pressrooms. *Inland Ptr* 55:875-6 Ag '15  
 Cooling water of condensation; introduction to a collection of psychrometric tables for cooling tower work. *Textile World* 49:892-4 S '15  
 Effect of relative humidity on an oak tanned leather belt. W. W. Bird and F. W. Roys. *Il Am Soc M E J* 37:447-9 Ag '15; Same. *Iron Tr R* 56:1315-17 Je 24 '15; Same. *Power* 42:169-71 Ag 3 '15; Summary. *Iron Age* 96:26-7 J1 '15; Discussion. *Am Soc M E J* 37:449-51 Ag '15  
 Experiments on humidifying air at the Oliver Wendell Holmes school; with discussion. C. F. Eveleth. plans *Am Soc Heat & V E* 19:109-27 '13  
 Humidifying mine air. J. W. Reed. *Colliery* 35:330-2 Ja '15  
 Humidity control of warm air furnaces. C. E. Stewart. *diag Metal Work* 33:80 Ja 1 '15  
 Humidity of mine air. *Colliery* 35:302 Ja '15  
 Humidity of mine air. R. Y. Williams. *Il map U S Bur Mines Bul* 83:1-63 '14  
 Lecture course on elements of heating. C. A. Fuller. *Il Metal Work* 84:430+, 533+ O 1, N 5 '15  
 Measurements for the household. *U S Bur Stand Circ* 55:108-11 '15  
 Properties of saturated air. W. D. Ennis. *Power* 41:402-4 Mr 23 '15

**Humins**

- Origin of the humin formed by the acid hydrolysis of proteins. R. A. Gortner and M. J. Blish. *Am Chem Soc J* 37:1030-6 Je '15

**Humphrey pumps**

- First large American-built Humphrey pump. C. C. Trump. *Il diags Power* 40:767-70 D 1 '14; Same. *Eng N* 73:154-8 Ja 28 '15; Abstract. *Ind Eng* 15:28-7 Ja '15  
 Humphrey pump: recent developments. C. C. Trump. *Il diags Sibley J* 80:55-9 N '15  
 Irrigation by pumping at Del Rio, Texas. A. Potter. *Il diags plan Eng & Contr* 43:86-71 Ja 27 '15; Same abr. *Eng Rec* 71:596-8 My 8 '15

**Humphreys, Alexander C., 1851-**

- President Humphreys. A. S. Miller. *Stevens Ind.* 32:11-18 Ja '15

**Hunt, Andrew Murray, 1859-**

- Sketch. *por Eng M* 50:215 N '15

**Hunting**

- Hunting on the national forests. H. A. Smith. *Il Am For* 21:172-82 Mr '15

**Huntington-Heberlein process**

- Lead smelting at El Paso. H. F. Easter. *Am Inst Min E Bul* 104:1493-1506 Ag '15; Excerpts. *Eng & Min J* 100:386-7 Ag 28 '15; Abstract. *Met & Chem Eng* 13:814 N 1 '15

**Hunt's Point terminal. See New York (city)—Wharves****Hurricanes**

- Cause and prevention of storm erosion on Gulf coast. G. O. Case. *Il Eng N* 74:1072-5 D 2 '15  
 Engineering aspects of New Orleans hurricane. W. H. P. Creighton. *Eng N* 74:710 O 7 '15  
 Meteorology of West Indian hurricane, Sept. 22-Oct. 2. *Eng N* 74:710-12 O 7 '15  
 New Orleans record for succession of storms broken. *map Eng Rec* 72:562-3 N 6 '15  
*See also* Galveston—Hurricane, 1915

**Hybridization**

- Artificial production of vigorous trees. *Sci Am S* 79:150 Mr 6 '15  
 Experiments in hybridizing Japanese flowers. W. P. Jenny. *Sci Am S* 79:13-19 Ja 9 '15

**Hydantoins**

- Researches on hydantoins; a new method of synthesizing glycoxyamidine compounds, and the conversion of glycoxyamidine into isomers of creatinine. T. B. Johnson and B. H. Nicolet. *Am Chem Soc J* 37:2416-26 O '15  
 Researches on hydantoins; a new synthesis of *o*-tyrosine. T. B. Johnson and W. M. Scott. *Am Chem Soc J* 37:1846-56 Ag '15  
 Researches on hydantoins; geometrical isomerism in the hydantoin series. T. B. Johnson and S. E. Hadley. *Am Chem Soc J* 37:171-7 Ja '15  
 Researches on hydantoins: stereoisomeric modifications of benzalhydantoin. T. B. Johnson and J. S. Bates. *Am Chem Soc J* 37:383-5 F '15  
 Researches on hydantoins; synthesis of the hydantoin of 2-hydroxy-5-aminophenylalanine. T. B. Johnson and W. M. Scott. *Am Chem Soc J* 37:1856-63 Ag '15  
 Researches on hydantoins; the condensation of cinnamic aldehyde with hydantoins. T. B. Johnson and R. Wrenshall. *Am Chem Soc J* 37:2133-44 S '15  
 Researches on hydantoins; the interaction of hippuric acid with thiocyanates. T. B. Johnson, A. J. Hill and B. H. Bailey. *Am Chem Soc J* 37:2406-16 O '15  
 Researches on hydantoins; the synthesis of 1,3,4-trisubstituted hydantoins from diethyl aminomalonate. T. B. Johnson and N. A. Shepard. *Am Chem Soc J* 36:1735-42 Ag '14

**Hydrants**

- Care of hydrants in winter. P. Gear. *Munic J* 38:108 Ja 28 '15  
 Cincinnati high-pressure fire hydrants. *diags Eng N* 74:153 J1 22 '15  
 Design details of the Cincinnati high pressure fire system. *diags Eng & Contr* 43:529-32 Je 16 '15  
 Equitable hydrant rentals and better methods for apportioning fire protection cost. J. W. Alvord. *Am Water Works Assn J* 1:95-102 Mr '14; Same. *Eng & Contr* 41:579-80; My 20 '14; Same. *Munic J* 38:850-2 Je 11 '14; Same cond. *Eng Rec* 69:586-7 My 23 '14; Discussion. *Am Water Works Assn J* 1:538-45, 697-703 S-D '14  
 Hydrant tests in Chicago indicate cheaper maintenance possibilities. *Il Eng Rec* 71:483-4 Ap 17 '15  
 Hydrant-thawing apparatus. *Il diag Munic Eng* 49:117-18 S '15

**Hydrates**

- Method of determining the hydrates formed by a salt. H. W. Foote. *Am Chem Soc J* 37:288-92 F '15

**Hydration**

- High-strength concretes produced through lowering of surface tension of mixing water. N. C. Johnson. *Il Eng Rec* 71:320-4 Mr 13 '15

**Hydration—Continued**

Hydration of Portland cement. A. A. Klein and A. J. Phillips. pls U S Bur Stand Tech Pa. 48:3-71 '14; Abstract. J Fr Inst 178:635-9 N '14

Mechanical features of the hydration of Portland cement and the making of concrete as revealed by microscopic study. N. C. Johnson. II Am Soc M E J 37:516-25 S '15; Abstract. Eng M 49:744-5 Ag '15; Discussion. Am Soc M E J 37:525-3 S '15

Hydration of lons. See Solution (chemistry)

Hydraulic cartridge. See Hydraulic mining cartridge

**Hydraulic engineering**

Concrete chute drops water 130 feet from canal to reservoir. D. W. Cole. II diags Eng Rec 71:456-7 Ap 10 '15

San Francisco's notable engineering works. II Eng Rec 71:233-3 F 20 '15

See also Aqueducts; Breakwaters; Bridges—Foundations and piers; Calissons; Canals; Channels; Cofferdams; Culverts; Dams; Docks; Drainage; Dredges; Dredging; Dredging machinery; Embankments; Engineering; Flood control; Flumes; Harbors; Hydraulic excavation; Hydraulic machinery; Hydraulic mining; Hydraulics; Hydroelectric plants; Irrigation; Levees; Pumping stations; Pumps; Reclamation of land; Reservoirs; Rivers—Regulation; Sea walls; Surge tanks; Turbines; Water; Water flow; Water power; Water supply engineering; Water wheels; Wells; Wharves

**Hydraulic excavation**

Handling hydraulic fill on Plute dam. J. Jensen. II diags Eng Rec 72:80-1 JI 17 '15

Stripping of gravel pits by hydraulic methods. W. H. Wilms. diags Ry Age 58:1430-3 Je 18 '15

**Hydraulic machinery**

Banding projectiles. II diag Iron Age 96:466 Ag 26 '15

Conradson hydraulically operated, six-spindle, vertical, automatic chucking, boring and turning machine. II Iron Tr R 56:920-2 My 6 '15

Emergency hydraulic jack. diag Power 40:877 D 22 '14

Hydraulic press for bearing and bushing changes. El. L. Stephens. II Elec Ry J 46:282 Ag 14 '15

Hydraulic shrapnel billet piercing press. II Mach 21:682-3 Ap '15

Hydraulic wheel and armature presses. Elec Ry J 46:323-4 Ag 21 '15

Increasing the output of hydraulic presses. Elec Ry J 45:1170 Je 19 '15

Machines for breaking pig iron. II Iron Tr R 56:1069 My 27 '15

Making tunnel shield jacks. II Iron Age 95:502 Mr 4 '15

75-ton self-contained hydraulic broaching and forcing press. II Ind Eng 14:401 O '14

Shell nosing and banding presses. II Iron Age 96:417 Ag 19 '15

60-ton hydraulic forcing press. II Iron Age 95:1393 Je 24 '15

See also Hydraulic engineering; Pumping machinery; Turbines; Water wheels

**Hydraulic mining**

Bagley scraper for gravel mining in Alaska. L. H. Eddy. II Eng & Min J 100:257-8 Ag 14 '15

Comparative hydraulic-mining methods. L. H. Eddy. Eng & Min J 99:481-3 Mr 13 '15

Cost of hydraulic sand and gravel mining. R. J. Borhek. Eng & Contr 43:573-4 Je 30 '15

Development methods at Fairbanks. H. I. Ellis. II diags Eng & Min J 99:1023-9 Je 12 '15

Elevating placer tailings with a Hayward bucket. H. I. Ellis. Eng & Min J 100:309-10 Ag 21 '15

Gold Bar hydraulic mine. Blewett, Wash. H. I. Ellis. diags Eng & Min J 100:878-9 O 23 '15

Gold recovery at placer mines. D. F. Carver. II Eng & Min J 100:472-3 S 18 '15

Hydraulic mining at Circle. H. I. Ellis. Eng & Min J 98:1104-5 D 19 '14

Hydraulicking at Waldo, Ore. W. H. Wright. II Eng & Min J 100:211-14 Ag 7 '15

Koyukuk placer-mining district. Eng & Min J 99:1021-2 Je 12 '15

Opportunity in placer mining. C. Hartley. Eng & Min J 99:185-8 Ja 28 '15

Placers of Antioquia, Colombia. R. W. Perry. II map Eng & Min J 100:588-9 O 9 '15

Rockier and grizzly mining on the north Saskatchewan. J. A. Macdonald. diags Eng & Min J 100:187-3 JI 31 '15

Thawing methods at Fairbanks. H. I. Ellis. II diags Eng & Min J 100:1-6 JI 3 '15

United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 941-5 '15

Yakataga beach placers. A. G. Thompson. II Eng & Min J 99:763-5 My 1 '15

See also Gold dredging; Gold mines and mining

**Hydraulic mining cartridge**

Hydraulic cartridge. J. Tonge. diag Eng M 49:606 JI '15

Hydraulic mining cartridge for breaking rock. Eng Rec 71:28 Ja 2 '15

Mechanical device for use where explosives are impossible. J. Tonge. II diags Sci Am S 79:156-8 Mr 6 '15

**Hydraulic motors**

See also Turbines; Water wheels

Hydraulic power. See Hydraulic machinery; Hydroelectric plants; Water power

**Hydraulic rams**

Action of the hydraulic ram. plan Dom Eng 71:369 Je 26 '15

Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:284-6 S 4 '15

Hydraulic stowage. See Mine timbering

**Hydraulic transmission**

Hydraulic transmission. diags Horseless Age 35:234-5 F 17 '15

Hydraulic valves. See Valves, Hydraulic

**Hydraulics**

Circular sewers versus egg-shaped, catenary and horseshoe cross-sections. R. D. French. Eng Rec 72:222-3 Ag 21 '15

Comparing sewer sections. B. Brooks; R. S. Beard. 39 diags Eng Rec 73:608-10 N 13 '15

Constructing logarithmic charts for hydraulic formulas. L. G. Hall. Eng & Contr 44:31-2 JI 14 '15

Design of turbine draft tubes analyzed. A. G. Hillberg. Eng Rec 72:604-7, 680-1 N 13-20 '15

Hydraulic jump in open-channel flow at high velocity. abstract. K. R. Kennison. Am Soc M E J 37:655 N '15

Hydraulics of irrigation, drainage, and other channels. L. Schmeer. Eng & Contr 42:284-90 S 23 '14

Influence of disk friction on turbine pump design. F. zur Nedden. diags Am Soc M E J 37:538-44 S '15; Abstract. Int Marine Eng 20:366 Ag '15; Discussion. Am Soc M E J 37:545-6 S '15

Logarithmic diagram plotting of hydraulic formulas. W. A. Lyon. Eng & Contr 43:239 Mr 17 '15

Models, properly designed, show correctly performance of dams and turbines. B. F. Groat. Eng Rec 72:877-8 S 25 '15

Nomographic charts for Kutter's formula. G. S. Coleman. Eng Rec 72:489 O 16 '15

Relation of stream gaging to the science of hydraulics; abstract. C. H. Pierce and R. W. Davenport. Am Soc M E J 37:614 O '15

Table of circular and horseshoe conduit sections. Eng N 78:1182-3 Je 17 '15

Tests check computed values of surges; investigation at Tallulah Falls hydroelectric plant in Georgia indicate accuracy of formula commonly used. E. Lauchli. diag Eng Rec 71:378-9 Mr 20 '15

Transportation of debris by running water. R. T. Hancock. Eng & Min J 99:459-60 Mr 6 '15

See also Fluids; Hydraulic engineering; Hydraulic machinery; Hydrodynamics; Hydrometers; Nozzles; Rivers; Siphons; Stream flow; Stream measurement; Water; Water flow; Water power

**Hydrazine**

Action of monochloroacetic acid on semi-carbazide and hydrazine. J. R. Bailey and W. T. Read. *Am Chem Soc J* 86:1747-66 Ag '14  
Chemical reactions in anhydrous hydrazine. T. W. B. Welsh and E. J. Broderston. *diags Am Chem Soc J* 37:825-32 Ap '15  
Electrolysis of a solution of sodium hydrazide in anhydrous hydrazine. T. W. B. Welsh. *diag Am Chem Soc J* 37:497-508 Mr '15

**Hydrazine diperchlorate**

Description of the new compound, hydrazine diperchlorate. J. W. Turrentine. *Am Chem Soc J* 37:1122-8 My '15

**Hydrazine salts**

Behavior of certain hydrazine salts on decomposition by heat. J. W. Turrentine. *Am Chem Soc J* 37:1105-14 My '15

**Hydrazine sulfate**

Electrochemical oxidation of hydrazine sulfate and ammonium hydroxide. J. W. Turrentine and J. M. Olin. *Am Chem Soc J* 37:1114-22 My '15

**Hydrazinodiacetic acid**

New synthesis of iminoacetoneitrile and its conversion to hydrazinodiacetic acid. J. R. Bailey and D. F. Snyder. *Am Chem Soc J* 37:935-42 An '15

**Hydrocarbons**

Action of chloral, bromal and benzaldehyde on the polycyclic hydrocarbons in the presence of aluminum chloride. G. B. Frankforter and W. Kritchevsky. *Am Chem Soc J* 37:385-92 F '15

Action of trioxymethylene on the various hydrocarbons in the presence of aluminum chloride. G. B. Frankforter and V. Kokatnur. *Am Chem Soc J* 37:2399-401 O '15

Estimation of aromatic hydrocarbons in cracked petroleum. W. F. Rittman, T. J. Twomey and G. Egloff. *Met & Chem Eng* 18:682-6 O '15

Heats of combustion of aromatic hydrocarbons and hexamethylene. T. W. Richards and F. Barry. *Am Chem Soc J* 37:993-1020 My '15

See also Azulene

**Hydrochloric acid**

Method for the precise standardization of hydrochloric acid solutions. L. W. Andrews. *Am Chem Soc J* 36:2089-91 O '14

Modification of starch by gaseous hydrochloric acid. F. C. Frary and A. C. Dennis. *J Ind & Eng Chem* 7:214-16 Mr '15

Physiological activity of combined hydrochloric acid. J. H. Long. *Am Chem Soc J* 37:1338-47 My '15

**Hydrocyanic acid**

Determination of small quantities of hydrocyanic acid. A. Viehoever and C. O. Johns. *Am Chem Soc J* 37:601-7 Mr '15

**Hydrodynamics**

Suction between passing ships. S. A. Reeve. *diags Sci Am S* 79:30-2, 46-8 Ja 9-16 '15

**Hydroelectric plants**

Design of turbine draft tubes analyzed. A. G. Hillberg. *Eng Rec* 72:604-7, 630-1 N 13-20 '15

Developments in the hydroelectric field in 1914. D. W. Mead. *Eng Rec* 71:6-7 Ja 2 '15

Four years' operating experience on a high-tension transmission line. A. Bang. *diags pls Am Inst E E Pro* 34:1425-45 J1 '15

Hydroelectric development with discussion. H. Flood, Jr. *Elec W* 65:1267-9 My 15 '15

Hydro-electric plant at a Bolivian tin mine. M. R. Lamb. *Il Eng & Min J* 99:7-9 Ja 2 '15

Ice fighting is systematized at Holtwood hydroelectric plant. F. A. Allner. *Il diag map Eng Rec* 72:66-8 J1 17 '15

Intermittent waterfall; using the power of Niagara falls without impairing its scenic beauty. H. Dunn. *Il Sci Am* 113:492-3+ D 4 '15

Operating hydro-electric plants without attendants. J. M. Wanchope. *Power* 41:407 Mr 23 '15

Operating results in a hydroelectric plant. *Elec R & W Elec'n* 66:310 F 13 '15

Outdoor hydroelectric generating plant. *diags plan Elec W* 66:689 S 25 '15

Severe frazil ice attack at Holtwood plant does not disturb service. F. A. Allner. *Il diag Eng Rec* 72:113-15 J1 24 '15

Tail-tunnel regulation suggests new opportunities in hydroelectric field. R. D. Johnson. *Eng Rec* 71:330 Mr 30 '15

Ten years' progress in the development of hydroelectric units. E. B. Ellicott and W. B. Jackson. *Elec R & W Elec'n* 66:1004 My 29 '15

Use of special gates to prevent ice formation at intake screens. *Il Elec W* 66:1030-1 N 6 '15  
See also Dams; Electric transmission; Surge tanks

**Auxiliary plants**

A. I. El. E. discuss supply of energy from hydroelectric stations supplemented by supply from steam stations. *Elec W* 66:848 O 16 '15

Auxiliary steam plant of the Vancouver Island power company. H. W. Beecher. *Il plans Elec R & W Elec'n* 67:373-8 Ag 28 '15

Auxiliary steam power plant for Vancouver Island; steam turbine driven plant using oil fuel. W. L. Kidston. *Il plan Power* 42:534-8 N 9 '15

Combined operation of steam and hydraulic power in the Pennsylvania water and power company system. J. A. Walls. *Am Inst E E Pro* 34:2298-306 O '15

Electrical engineers hold hydro-electric session. *Power* 42:598 O 26 '15

Hydroelectric problems considered at Philadelphia meeting of American institute. *Elec R & W Elec'n* 67:763 O 23 '15

Owego, N. Y., light and power plant. G. Newell. *Il plan Power* 42:757-8 N 30 '15

Selling current on a small margin; a small water and steam plant. T. Wilson. *Il diags Power* 42:498-501 O 12 '15

Stand-by plant supplying steam to central heating system. G. Broili. *Power* 41:726 My 25 '15

Supplemental power for hydroelectric systems. J. F. Vaughan. *Am Inst E E Pro* 34:2307-19 O '15

**Cost**

Construction elements of the Tallulah Falls development. C. G. Adair and W. P. Hammond. *Il diags Am Inst E E Pro* 34:2497-546 O '15; Abstract. *Elec W* 66:916-18 O 23 '15

**Testing**

Color used in hydraulic tests of power plants. R. Taylor. *diags Eng N* 74:617-20 S 23 '15

Plant tests of a low-head hydro-electric development. F. Nagler. *Il diag Eng N* 72:1193-8 D 17 '14

Tests check computed values of surges. H. Lauchli. *diag Eng Rec* 71:378-9 Mr 20 '15

**Valuation**

Unique problem in valuation; inheritance tax appraisal of the Hales Bar hydro-electric plant. L. L. Tribus. *Eng N* 73:884-5 F 25 '15

**Alabama**

Alabama power scheme. *Il plan map Engineer* 119:132-5 F 5 '15

Construction plant and methods for concrete work on the Lock twelve dam, Coosa river, Alabama. E. L. Sayers and A. C. Polk. *diags plan Eng & Contr* 43:260-5 Mr 24 '15

**British Columbia**

Coquitlam-Buntzen hydroelectric development. *Il Elec W* 66:175-7 J1 24 '15

**California**

Hydroelectric development on Bishop Creek, Cal. C. O. Poole. *Il diags plans Elec W* 64:757-61, 805-9, 858-63, 902-10, 949-53, 1001-3, 1045-7, 1093-4, 1143-7, 1193-6 O 17-D 19 '14

Interconnected systems serving San Francisco; details of the generating equipments and transmitting circuits tied in with the larger system of the Pacific gas & electric company, which covers half of California. *Il diags map Elec W* 65:1356-82 My 29 '15

Lake Spaulding hydroelectric development of the Pacific gas & electric co. R. L. Dougherty. *Il map Sibley J* 30:42-8 N '15

Los Angeles nears realization of city power plan. *Il Eng Rec* 72:167 Ag 7 '15

**Hydroelectric plants—California—Continued**

Saving eight million tons of coal a year; a hydro-electric development of Big Creek, California. *Il Sci Am* 112:332-3 Ap 24 '15  
 Spaulding-Drum power development; with discussion. J. A. Britton. *Il diags Am Soc M E J* 37:215-23 Ap '15

**Chile**

Hydro-electric power plant in Chile. R. E. G. Clark. *Il diag Engineer* 118:597-9 D 25 '14

**Georgia**

Building the Mathis dams. E. Lauchli. *Il diags plans Eng N* 74:529-32, 529-91 S 16-23 '15  
 Construction elements of the Tallulah Falls development. C. G. Adgitt and W. P. Hammond. *Il diags Am Inst E E Pro* 34:2497-546 O '15

**Guatemala**

Hydro-electric installation on a coffee plantation. J. H. Torrens. *Il Gen Elec R* 15:219-22 Mr '15; Same cond. *Eng M* 49:266-7 My '15

**Idaho**

Federal power house, Boise, Idaho. A. P. Connor. *Il plans Power* 41:594-5 My 4 '15  
 Federal project at Minidoka. A. P. Connor. *Il plans map Power* 41:422-5 Mr 30 '15  
 Government furnishes cheap electricity in southern Idaho. H. B. Walker. *Power* 41:228-9 F 16 '15

**Illinois**

Report on water-power development of sanitary district of Chicago. *Elec R & W Elec'n* 65:1095-7 D 5 '14

**India**

Bombay hydro-electric scheme. *Il maps Engineer* 119:378 Ap 16 '15  
 Bombay hydro-electric scheme. A. Dickinson. *plans diags maps Inst E E J* 53:693-714 My 15 '15; Abstract. *Elec W* 65:1302-3 My 22 '15; Discussion. *Inst E E J* 53:715-21, 802-4 My 15-Je 1 '15  
 British India. *U S Sp Cons Rep* 72:100-3 '15

**Italy**

Hydroelectric enterprises in Italy. L. W. Schmidt. *Elec W* 65:1131 N 20 '15

**Japan**

Hydroelectric power from snowcapped Fujiyama. C. Tsukamoto. *Il diag map Elec W* 65:910-13 O 23 '15  
 115,000-volt hydroelectric system in Japan. *Il diags plan Elec W* 65:1599-1606, 1671-8 Je 19-26 '15

**Maine**

Central-station development at Portland, Maine. *Il map Elec W* 65:519-22 F 27 '15  
 Hydroelectric development at Rumford, Maine. *Il Elec W* 65:79-85 Ja 9 '15

**Massachusetts**

Discussion of the hydro-electric power plant at the Wachusett dam, Clinton, Mass. Boston Soc C E J 2:109-19 Mr '15  
 Hydraulic redevelopment at Turners Falls. H. M. Turner. *Il diags Eng N* 74:202-6 J 29 '15  
 Hydro-electric power plant at the Wachusett dam, Clinton, Mass. B. C. Thayer and E. R. E. Allardice. *Il diags Boston Soc C E J* 1:523-48 D '14; Abstract. *Munic J* 88:101-3 Ja 28 '15  
 Massachusetts hydroelectric companies. map *Elec R & W Elec'n* 67:180 J 24 '15  
 New plant marks further step in development of Deerfield river, Massachusetts. *Il diags map Eng Rec* 72:374-7, 423-4 S 25-O 2 '15

**Michigan**

Hydro-electric development of the Peninsular power co. C. V. Seastone. *Il diags plans Am Inst Min E Bul* 98:249-70 F '15

**Minnesota**

Coon Rapids low head hydro-electric development on the Mississippi river near Minneapolis. J. W. Link. *Il diags plan W Soc E J* 19:979-1006 D '14; Same cond. *Eng & Contr* 43:151-2 F 17 '15; Abstract. *Am Soc M E J* 87:192 Mr '15; Discussion. *W Soc E J* 19:1007-15 D '14

**Montana**

System of the Montana power company. M. Hebgen. *Il map Elec W* 65:1535-44 Je 12 '15

**New England**

Hydroelectric power in New England. H. I. Harriman. *Elec R & W Elec'n* 66:374 My 8 '15

**New York (state)**

Central hydroelectric plant of 50,000 horsepower replaces inefficient separate units at Cohoes. A. G. Hillberg. *Il diags maps Eng Rec* 71:352-4, 395-8 Mr 20-27 '15  
 Cohoes, N. Y., hydro-electric development. W. O. Rogers. *Il plans Power* 42:466-71 O 5 '15  
 Hydroelectric development at Cohoes, N. Y. *Il diags plan Elec W* 65:718-22 Mr 20 '15  
 Hydro-electric development of the Cohoes company at Cohoes, N. Y. B. R. Connell. *Il diags plans map Gen Elec R* 18:340-52 My '15  
 Redevelopment of old canal power at Cohoes Falls, N. Y. *Il plan Eng N* 73:456-9 Mr 4 '15  
 Salmon river power plant. W. O. Rogers. *Il plans Power* 41:320-6 Mr 9 '15  
 Water-power plant in the heart of Rochester, N. Y. *Il Elec R & W Elec'n* 66:1162 Je 19 '15

**New Zealand**

Hydro-electric developments in New Zealand. *Il Engineer* 119:447-8 My 7 '15  
 Hydro-electric power in New Zealand. W. Wilson. *Il map Eng M* 49:386-51 Je '15  
 Interesting hydro-electric plant in New Zealand. *Il Engineer* 120:254-5 S 10 '15

**Oregon**

5000-hp. chain drive for a hydro-electric plant. *diags Eng N* 74:544-5 S 16 '15

**Pacific coast**

Electric developments on the Pacific coast. *Il Elec W* 65:1387-98 My 29 '15  
 Hydroelectric development in the West. *Elec W* 65:1514-15 Je 12 '15  
 Possibilities of hydro-electric power in the Pacific northwest. G. H. Moore. *Eng N* 73:342-3 F 13 '15  
 Practice in high-head hydraulic plants; abstract. J. P. Jollyman. *Elec W* 65:1513 Je 12 '15

**Panama**

Electricity in the construction and operation of the Panama canal. E. Schildhauer. *Il Gen Elec R* 18:sup688-721 J 1 '15

**Pennsylvania**

Ten per cent efficiency increase follows change from double to single-runner turbine. *Il diags Eng Rec* 71:366-7 Mr 20 '15

**Quebec**

Cedars hydro-electric development. St. Lawrence river. *Il diags plan Eng N* 73:566-73 Mr 25 '15  
 Concrete-unit building construction at Cedars Rapids. *Il diags Eng N* 73:675-7 Ap 8 '15  
 Turbines of the Cedars hydro-electric plant. *Il diag Eng N* 73:611-13 Ap 1 '15

**Seattle, Washington**

Mishap to Seattle municipal plant. *Il Elec W* 65:902-3 Ap 10 '15

**South Carolina**

Hydroelectric plant on the Savannah river. *Il diags Elec W* 66:1132-4 N 20 '15

**Spain**

Hydro-electric undertakings in Spain. plan *Engineer* 120:41-2 J 19 '15

**Sweden**

Features of Gullspang hydro-electric power station. *Elec R & W Elec'n* 67:412 S 4 '15  
 Swedish government builds hydroelectric plant above the Arctic circle. *Il diags Eng Rec* 72:156-8, 194-8 Ag 7-14 '15

**Switzerland**

Penstock carries 5,412-ft. head. *diags Eng N* 74:322 O 23 '15

## Hydroelectric plants—Continued

## Tennessee

Business engineering problem in water power development with the solution for a specific case. W. V. N. Powelson. *Eng & Contr* 43: 222-6 Mr 10 '15; Excerpt (Change of runners permits 100 per cent head increase). *Eng Rec* 71:202 F 13 '15

## Texas

Austin's hydroelectric plant has unusual reinforced-concrete wheel casings. *Il diag* *Eng Rec* 71:750-1 Je 12 '15

Hydroelectric development at Austin, Tex. *Il diag* *Elec W* 65:1460-2 Je 5 '15

New Austin dam and power plant. F. S. Taylor. *Il Eng & Contr* 43:486-7, 492-5, 535-6 My 26-Je 2, 16 '15; Same cond. *Elec R & W Elec'n* 66:939-45 My 22 '15

Power development at the Austin dam. F. S. Taylor. *Il diag plan Eng N* 73:1124-6 Je 10 '15

## United States

Electrical features of the U. S. reclamation service. F. H. Newell. *Am Inst E E Pro* 33: 1583-98 O '14; Summary. *Elec W* 64:753 O 17 '14; Discussion. *Am Inst E E Pro* 34:675-9 Ap '15

Features of engineering in the West. H. F. Stratton. *Il map* (p 142) *Sibley J* 29:146-9 F '15

Merging hydro-electric interests. *Power* 41: 681-2 My 18 '15

## Utah

Transmission at 130,000 volts in Utah. *Il plans Elec W* 65:1451-5 Je 5 '15

## Vermont

480-ft.-head Vermont water-power; features of 6000-hp hydroelectric station at Chittenden. *Il diag* *Elec W* 65:1297-9 My 22 '15

Hydro-electric power plants at Chittenden, Vt. T: Fraher. *Il diag* *map Power* 41:494-9 Ap 13 '15

New Chittenden plant of the Pittsford power co. T: Fraher. *Il diag* *Eng N* 74:14-17 Jl 1 '15

New power plant has highest head in New England. *Il map Eng Rec* 71:652-3 My 22 '15

## Wisconsin

Plant tests of a low-head hydro-electric development. F. Nagler. *Il diag Eng N* 72:1193-8 D 17 '14

## Hydroelectric plants, Municipal

Boston municipal water plant derives income from water power. W. B. Conant. *Il Munic Eng* 49:117 S '15

## Hydroelectric power

Conditions that will encourage hydroelectric development. J: A. Britton. *Elec W* 64: 1236-8 D 26 '14

Development of water power on public lands. *Eng Rec* 71:76-8 Ja 18 '15

Economic and social effects of hydro-electric power. F. G. Baum. *Power* 42:597-8 O 28 '15

Electric power in Canadian industry. C. H. Mitchell. *map Power* 42:667-8 N 9 '15

Electric power industry. D: B. Rushmore. *Il map Gen Elec R* 18:427-39 Je '15

Electro-metallurgical industries as possible consumers of electric power. D. A. Lyon and R. M. Keeney. *Am Inst Min E Bul* 104:1707-30 Ag '15; Excerpts. *Iron Age* 96:360-2 Ag 12 '15

Hydro-electric power compared with steam; with discussion. R. P. Bolton. *Am Soc Heat & V E* 20:374-91 '14

Hydro-electric power in Ontario. A. Beck. *Il Elec W* 66:1072-3 N 13 '15

Hydro-electric project to be administration measure. *Power* 42:356-7 S 7 '15

New Niagara power project. *Il map Power* 42: 416 S 21 '15

Proposed Missouri-Meramec river hydro-electric power development; committee report. *Assn Eng Soc J* 55:32-6 Jl '15

Relative costs of steam and hydro-electric power. *Power* 41:246 F 16 '15

Running railroads by water power. T: F. Logan. *Il Sci Am* 112:603-4 Je 19 '15

Senate committee told water-power bill would retard development. *Elec W* 65:54-7 Ja 2 '15

Testimony of Mr. Sidney Z. Mitchell on the water-power bill. *Elec W* 65:187-9 Ja 16 '15

Testimony on water-power bill. G. Pinchot; P. M. Lincoln. *Elec W* 65:181 Ja 9 '15

Unusual activity in Canadian power development. *Eng N* 74:466-7 S 2 '15

Uses for power from irrigation dams; abstract. E. K. Scott. *Ind Eng* 14:412-13 O '14

## Hydrofluoric acid

Industrial uses of hydrofluoric acid. K. F. Stahl. *J Ind & Eng Chem* 7:56-8 Ja '15; Same. *Sci Am S* 79:140-1 F 27 '15

## Hydrogen

Determination of hydrogen in gas mixtures by means of colloidal palladium. G. A. Burrell and G. G. Oberfell. *J Ind & Eng Chem* 6:982-4 D '14

Dissociation of hydrogen into atoms. I. Langmuir. *Am Chem Soc J* 37:417-58 Mr '15

Dissociation of hydrogen into atoms. I. Langmuir and G. M. J. Mackay. *Am Chem Soc J* 36:1708-22 Ag '14

Electrolytic production of oxygen and hydrogen—a typical plant. *Il Elec R & W Elec'n* 66:1170-1 Je 19 '15

Free energy of oxygen, hydrogen, and the oxides of hydrogen. G. N. Lewis and M. Randall. *Am Chem Soc J* 36:1969-93 O '14

Hydrogen and the rare gases. J. Dewar. *Sci Am S* 79:191 Mr 20 '15

Hydrogen, its technical production and uses. A. F. Seeker. *Sci Am S* 79:153 Mr 6 '15

Hydrogen manufacture; abstract. A. Fourniols. *Met & Chem Eng* 13:567 S 1 '15

New method of producing pure compressed hydrogen; abstract. F. Bergius. *diag Am Soc M E J* 37:482-3 Ag '15

## Hydrogen chloride

Studies in conductivity; the conductivity of some formates and of hydrogen chloride in (anhydrous) formic acid; cases of apparent agreement of strong electrolytes with the mass law. H. I. Schlesinger and A. W. Martin. *Am Chem Soc J* 36:1614-18 Ag '14

## Hydrogen peroxide

Experimental data comparing the delicacy of different tests for hydrogen peroxide in milk. I. T. Darlington. *J Ind & Eng Chem* 7:876 Ag '15

## Hydrogen sulphide

Lead acetate test for hydrogen sulphide in gas. R. S. McBride and J. D. Edwards. *diag* *pls U S Bur Stand Tech Pa* 41:1-46 '14; Abstract. *J Fr Inst* 178:639-42 N '14; Abstract. *Met & Chem Eng* 13:62 Ja '15

Method for the determination of hydrogen sulphide in gas. A. B. Way. *Am Gas Inst Pro* 9:pt 1, 164-7 '14; Same cond. *Am Gas Light J* 101:364 D 7 '14; Discussion. *Am Gas Inst Pro* 9:pt 1, 167-78 '14

## Hydrogenation

Hydrogenation of oils and soft fats. *Sci Am S* 80:99 Ag 14 '15

Studies in catalytic hydrogenation; a new method of hydrogenation of volatile substances and the rate of hydrogenation of ethylene. J. B. Rather and E. E. Reid. *Am Chem Soc J* 37:2115-18 S '15

## Hydrographic surveying

New hydrographic signal of the U. S. coast and geodetic survey. *diag Eng N* 74:27-8 Jl 1 '15

Submarine for hydrographic work. S. Lake. *Il diag Sci Am* 113:272-3 S 25 '15

See also Sounding

## Hydrolysis

Estimation of raffinose by enzymotic hydrolysis. S. S. Hudson and T. S. Harding. *Am Chem Soc J* 37:2193-8 S '15

Hydrolysis of sodium carbonate in solution. F. C. Frary and A. E. Nietz. *Am Chem Soc J* 37:2263-78 O '15

Hydrolysis of sugar solutions under pressure. W. S. Hubbard and W. L. Mitchell. *J Ind & Eng Chem* 7:809-10 Jl '15

Manufacture of ethyl alcohol from wood waste; the hydrolysis of white spruce. F. W. Kressmann. *J Ind & Eng Chem* 7:920-2 N '15

Hydrometallurgical apparatus. See Metallurgical apparatus



**Hydrometallurgy**

- Anaconda leaching and acid plants. E. P. Mathewson. *II* plans Eng & Min J 99:723-7 Ap 24 '15
- Case for copper hydrometallurgy; inexpensive and efficient treatment of smelter flue dust and carbonate ore. G. C. Westby. *II* Met & Chem Eng 13:295-7 My '15
- Chloridizing blast roasting and leaching. G. A. Keep. *II* diag Eng & Min J 99:265-9, 315-23 F 6-13 '15
- Chloridizing ores at Silver City, Utah. *II* diag Met & Chem Eng 12:757-9 D '14
- Copper hydrometallurgy; process patented by E. A. C. Smith. Met & Chem Eng 13:451 J1 '15
- Copper leaching; discussion. L. D. Ricketts and others. Met & Chem Eng 13:319-24 My '15
- Hydro-electrolytic treatment of copper ores.\* R. R. Goodrich. *II* Am Inst Min E Bul 104: 1851-94 Ag '15; Summary. Met & Chem Eng 13:766 O 15 '15
- Hydrometallurgical treatment of Michigan copper tailings. R. D. Leisk. plan Met & Chem Eng 13:233-4 Ap '15
- Leaching a zinc-lime ore with acids. O. C. Halston and A. E. Gartside. Met & Chem Eng 13:161-5 Mr '15
- Leaching at the Calumet & Hecla. Eng & Min J 99:821 My 8 '15
- Leaching copper with ammoniacal solutions. Met & Chem Eng 13:449-51 J1 '15
- Leaching experiments on the Ajo ores. S. Croasdale. Am Inst Min E Bul 92:1881-1929 Ag '14; Abstract. Met & Chem Eng 12:591-3 S '14; Excerpts. Eng & Min J 98:1098-9, 1139-40; 99:575-6 D 19-26 '14, Mr 27 '15
- Metallurgy of copper in 1914. L. Addicks. Eng & Min J 99:291-2 Ja 9 '15
- New copper metallurgy. H. A. Megraw. *II* diag Eng M 48:679-88 F '15
- Precipitating plant at the Copper Queen mines. C. M. Coats and G. L. Allen. *II* diag plan Eng & Min J 99:17-19 Ja 2 '15
- Problems in copper leaching; discussion. Am Inst Min E Bul 100:711-37 Ap '15; Discussion. 108:2459-60 D '15
- Pulp constants, with tables to facilitate tonnage calculations for pulps of all usual solution and dry slimes specific gravities. G. H. Clevenger, H. W. Young and T. N. Turner. Eng & Min J 98:1079-94 D 19 '14
- Roasting and leaching concentrator slimes tailings. L. Addicks. *II* flow sheet Am Inst Min E Bul 104:1471-84 Ag '15; Same. Met & Chem Eng 13:531-5 S 1 '15; Discussion. Am Inst Min E Bul 108:2460-4 D '15
- Solution control in ferric-chloride leaching of sulphide copper ores. F. N. Flynn and R. H. Hatchett. Met & Chem Eng 13:291 My '15
- Solution of pulp problems by graphic methods. W. J. McCauley. Eng & Min J 100:98-100 J1 '17 '15
- Status of copper hydrometallurgy. Eng & Min J 99:31-2 Ja 2 '15
- Van Arsdale's method of copper-ore treatment. Eng & Min J 100:81-2 J1 10 '15

**Hydrometers**

- Measurements for the household. *II* U S Bur Stand Circ 55:122-5 '15
- Will Quizz, jr. Power 41:453-4 Mr 30 '15

**Hydroplanes**

- Effect of beam on the speed of hydroplanes. L. Hope. Engineer 119:336-7 Ap 2 '15
- Latest novelty in speed boats. *II* Sci Am 118: 156 Ag 21 '15

**Hydrostatics**

- Curves for solving the hydrostatic catenary. H. M. Gibb. Eng N 78:668-70 Ap 8 '15
- Hydrostatic catenary surne on a concrete aqueduct. H. B. Muckleston. *II* diag map Eng N 74:58-63 J1 8 '15
- Reinforced-concrete tank of 100,000-gallon capacity designed by use of diagrams. A. R. James. diag Eng Rec 72:135-6 J1 31 '15

See also Compressibility; Hydrometers; Specific gravity

**Hydroxyazo compounds**

- Constitution of the hydroxyazo compounds; the action of unsymmetrical benzoylparatolylhydrazine upon benzoquinone and its homologs. W. McPherson and G. W. Stratton. Am Chem Soc J 87:906-15 Ap '15

**Hydroxylamine**

- Heat of neutralization of hydroxylamine and tetramethylammonium hydroxide. E. O. Ellingson. Am Chem Soc J 37:699-709 Ap '15
- Three isomeric ethyl secondarybutyl hydroxylamines. L. W. Jones and L. Neuffer. Am Chem Soc J 36:2202-8 O '14

**Hydroxytriphenylcarbinol**

- Triphenylmethyl; preparation of *p*-hydroxytriphenylcarbinol and attempts to isolate the corresponding triarylmethyl. M. Gomberg and R. L. Jickling. Am Chem Soc J 37:2575-91 N '15

**Hydroxyurethanes**

- New hydroxyurethanes and chromoisomeric silver salts of their acyl derivatives. L. W. Jones and R. Oesper. Am Chem Soc J 36: 2208-23 O '14

**Hygiene, Industrial**

- See also Factory restaurants; Factory sanitation; Foundry sanitation; Physical examinations

**Hygiene, Military. See Military hygiene****Hydrograph**

- Hydrograph. H: Briggs. Colliery 35:374-5 F '15

**Hygrometers. See Psychrometers****Hyroscope**

- Measurements for the household. *II* U S Bur Stand Circ 55:111-14 '15

**Hyphen. See Compound words****Hypochlorites**

- Automatic device controls hypochlorite application. E. E. Ludwick. diag Eng Rec 72: 103-4 J1 24 '15
- Collapsible hypo plant packed in a trunk. *II* diag Eng Rec 71:373 Mr 20 '15
- Disinfecting large public water supplies. T. Horton. Metal Work 84:40-1 J1 9 '15
- Hypochlorite treatment at Ludington. G. W. Clark. plan Munic J 38:394 Mr 25 '15
- Kinks in the control of hypochlorite at Denver. W. W. De Berard. *II* Am Water Works Assn J 2:442-5 Je '15; Same. Eng Rec 71:393-4 Mr 27 '15
- "New" surgical antiseptic; hypochlorites. Sci Am 113:164 Ag 21 '15
- Relative efficiency of liquid chlorine and hypochlorite of lime. F. E. Hale. Eng & Contr 43:173-4 F 24 '15
- Variations in practice disclosed by water sterilization statistics; status of hypochlorite and liquid chlorine methods of treatment. F. F. Longley. Eng Rec 71:291-2 Mr 8 '15

**Hypophysis. See Pituitary gland****Hysteresis**

- Determination of hysteresis loops. A. Ytterberg. diag Elec W 65:212-13 Ja 23 '15
- Effect of displaced magnetic pulsations on the hysteresis loss of sheet steel. L. W. Chubb and T. Spooner. *II* diag Am Inst E E Pro 34:2321-42 O '15
- Form factor and its significance. F: Bedell, R. Bown and H. A. Pidgeon. Am Inst E E Pro 34:1051-8 Je '15; Abstract. Elec W 66:7 J1 3 '15
- Hysteresis tests for rubber. E. L. Davies. J Ind & Eng Chem 6:985-6 D '14
- Plotting hysteresis curves. A. Ytterberg. diag Elec W 66:1043 N 6 '15
- Recent experiments on elastic hysteresis: abstract. R. Grammel. Am Soc M E J 87:115-16 F '15
- Structure and hysteresis loss in medium-carbon steel. F. C. Langenberg and R. G. Webber. *II* Am Inst Min E Bul 98:291-300 F '15; Same. Iron Age 95:506-8 Mr 4 '15; Same cond. Iron Tr R 57:576-7 S 23 '15
- Unsymmetrical hysteresis loop. J: D. Ball. Am Inst E E Pro 34:2275-97 O '15

See also Permeameter

**I****Ice**

- Aneroid calorimeter and specific heat of ice. Iron Tr R 57:223 J1 29 '15

**Ice—Continued**

Specific heat and heat of fusion of ice. H. C. Dickinson and N. S. Osborne. *diags* U S Bur Stand Bul 12:49-81 O 28 '16; Abstracts. J Fr Inst 179:489-91 Ap '15; Power 41:565 Ap 27 '15; Am Soc M E J 37:294-5 My '15

**Manufacture**

Artificial ice plants operating in conjunction with small central stations. H. Hechheimer. Elec R & W Elec'n 66:1168-9 D 19 '14

Ice making. Elec R & W Elec'n 67:57-8 J1 10 '15

Ice-making as a by-product of central stations. H. Cochran. *il diags* Am Soc M E J 37:369-74 J1 '15

Initial and operating costs of large ice plants. R. P. Kehoe. Power 42:546-6 O 19 '15

Making ice with purchased electric power. C. A. Tripp. *il Munic Eng* 43:294-6 My '15

Motor drive adopted for compressors and other equipment in Reading (Pa.) ice plant. A. L. Hart. *il Elec W* 66:1147-8 N 20 '15

Performance of refrigeration plant at Lübeck Germany. R. Stetefeld. Power 41:212-14 F 9 '15

Year's records from a raw-water ice plant. Elec W 66:470 Ag 28 '15

*See also* Refrigeration and refrigerating machinery

**Ice breaking vessels**

Ice-breaking train ferry steamer. *il diag plan* (supp) Engineer 120:49-50 J1 16 '15; Abstract. Int Marine Eng 20:515 N '15

**Ice cream**

Determination of fat in ice cream by the Babcock method. C. A. A. Utt. J Ind & Eng Chem 7:773 S '15

**Manufacture**

Electricity in ice-cream manufacture. *il Elec R & W Elec'n* 66:413-15; 67:55-7 Mr 6, J1 10 '15

**Ice harvesting**

Harvesting ice. W. H. Mallia. *il Sci Am S* 80:132-3 Ag 28 '15

Motor-driven ice saw. *il Eng N* 73:929 My 13 '15

**Ice houses**

Data on wood frame and reinforced concrete ice storage houses. Eng & Contr 44:37-9 J1 14 '15

Design of railroad ice storage houses. Eng & Contr 42:568-5 D 16 '14; Abstract. Ry Age 57:759-80 O 23 '14

Fireproof ice-house at Lake Hopatcong. *diags* Eng Rec 71:50-1 Ja 9 '15

40,000-ton railroad icehouse electrically operated. plans Eng Rec 72:132 J1 31 '15

**Ice making. See Ice—Manufacture****Ice on rivers, lakes, etc.**

Ice fighting is systematized at Holtwood hydroelectric plant. F. A. Allner. *il diag map* Eng Rec 72:66-8 J1 17 '15

Severe frazil ice attack at Holtwood plant does not disturb service. F. A. Allner. *il diag* Eng Rec 72:113-15 J1 24 '15

**Ice storage. See Ice houses****Icebergs**

Icebergs and their detection. Sci Am S 80:110-11 Ag 14 '15

**Iceland****Industries and resources**

Development of Iceland's resources. F. B. Aru-grimsson. Sci Am 113:291 O 2 '15

**Idaho**

*See also* Mines and mineral resources—Idaho

**Idaho power and light company**

Granted a certificate of convenience and necessity. Elec R & W Elec'n 66:249-50 F 6 '15

**Ideals**

Practical life ideals. V. Karapetoff. Sibley J 29:191-4 Mr '15

**Identification**

Passing of the Bertillon system of identification. R. B. Fosdick. Sci Am S 80:330-1 N 20 '15

**Igneous rocks. See Rocks, Igneous****Ignition of gas. See Gas—Ignition****Illinois**

*See also* Roads—Illinois

**Highway department**

Highway work in Illinois. *il Good Roads n s* 8:205-10 D 5 '14

**Industries and resources**

Illinois oil in 1914. R. S. Blatchley. Eng & Min J 99:136-7 Ja 16 '15

**Public utilities commission**

Work of the Illinois utilities commission; with discussion. R. M. Feustel. W Soc E J 19:965-78 D '14

**Illinois Central railroad**

Grade reduction on the Kentucky division. F. G. Water, jr. *il Ry R* 67:389-93 S 25 '15

Sixty-fifth annual report. map Ry Age 59:721-2, 784-6 O 22 '15

Track depression at Mattoon. *il diag plan* Eng N 74:110-12 J1 15 '15

**Illinois electric railways association**

Economics in power consumption, feeder-tap protection and care of commutators, and one-man cars discussed. Elec Ry J 45:626-8 Mr 27 '15

Meeting, Chicago, Oct. 29. Elec Ry J 46:952-3 N 6 '15

Presentation and discussion of committee reports. Elec Ry J 45:173 Ja 23 '15

**Illinois mining institute**

2d annual session. Colliery 35:325-6 Ja '15

**Illinois press association**

Golden jubilee. J. T. Elliott. Inland Ptr 55:382-4 Je '15

**Illinois state association of master plumbers**

23d annual convention, Springfield, Ill., Jan. 27-28, 1915. Metal Work 83:232-4 F 5 '15

23d annual convention, Springfield, Jan. 27-28. Dom Eng 70:179-82 F 6 '15

**Illinois state association of sheet metal contractors**

Convention, Peoria, Ill., May 12-13. Metal Work 83:740-3 My 21 '15

**Illinois. University**

Acoustics of auditoriums; investigation of the acoustical properties of the armory at the University of Illinois. F. R. Watson. *bibliog* *il Ill U Eng Exp Sta Bul* 73:1-32 '14; Same. Sci Am S 78:358-9, 380-2 D 5-12 '14

Acoustics of auditoriums; investigation of the acoustical properties of the armory at the University of Illinois. F. R. Watson. *il Brickb* 24:267-8 O '15

End framing for armory at University of Illinois and some general features of this structure. *il diags* Eng & Contr 43:141-3 F 17 '15

Engineering experiment station of the University of Illinois. E. B. Paine. Am Inst E E Pro 34:2421-7 O '15

Training in foundry work that is worth while. R. E. Kennedy and J. H. Hogue. *il Foundry* 43:405-11 O '15; Same. Iron Tr R 57:617-23 S 30 '15

**Illium**

Acid-resisting alloy to replace platinum in the construction of a bomb calorimeter. S. W. Farr. *il Am Chem Soc J* 37:2515-22 N '15

Developing an acid-resisting alloy. S. W. Farr. *il Iron Tr R* 57:991-2 N 18 '15; Same. Metal Ind n s 13:457-8 N '15; Abstract. Am Soc M E J 37:656-7 N '15; Abstract. Met & Chem Eng 13:973 D 15 '15

**Illuminating engineering society**

8th annual convention, Cleveland, Ohio, Sept. 21-24, 1914. *il Illum Engr* 7:556-7 D '14

Financing engineering societies. C. H. Sharp; W. D. Weaver. Elec R & W Elec'n 66:918-20 My 15 '15

9th annual convention in the United States. L. Gaster. Illum Engr 8:443-4 N '15

9th annual convention; program. Elec W 66:174 J1 24 '15

9th annual convention, Washington, D. C. Elec W 66:879-80 S 25 '15

9th annual convention, Washington, D. C., Sept. 20-22. Elec R & W Elec'n 67:619-24 O 2 '15

- Illuminating engineering society—Continued**  
 9th annual meeting, Washington, D. C. Sept. 20. Elec R & W Elec'n 67:574-7 S 25 '15  
 Progress of the past year. Illum Engr 8:1-4 Ja '15  
 Review of the Washington convention, Sept. 20-23. J. R. Cravath. Elec W 66:738-9 O 2 '15
- Illumination.** See Lighting
- Illuminometer.** See Photometry
- Imhoff tanks**  
 Additions to the Baltimore sewage-works. II diag Eng N 74:278-9 Ag 5 '15  
 Albany sewage-disposal works. J. H. Gregory. plans Eng N 74:692-6 O 7 '15  
 Constructing the Fitchburg sewage-works. F. A. Marston. II diag Eng N 74:4-6 J 1 '15  
 Design feature of new sewerage system and sewage disposal works for Cleburne, Texas. R. E. McDonnell. diag plans Eng & Contr 44:72-5 J 1 28 '15  
 Design of two residential sewage treatment plants, including settling tanks of Imhoff type. S. A. Greeley. II diag plans Eng & Contr 42:565-7 D 16 '14  
 Factors in design of Imhoff tanks at Fitchburg, Mass. II Eng Rec 71:332-3 Mr 13 '15  
 Imhoff sewage tank at Manchester, England. O. J. Wilkinson. diag Eng N 73:770-1 Ap 22 '15  
 Imhoff sewage tank, Waupun, Wisconsin. diag Eng N 73:280 F 11 '15  
 Imhoff tanks and sprinklers for sewage of Brighton district, Rochester, New York. diag plan Eng Rec 71:879-82 My 29 '15  
 Multiple flow chambers in Imhoff tanks. J. H. Gregory. diag Eng Rec 71:433-4 Ap 8 '15  
 Multiple flowing-through chambers in Imhoff tanks. diag Eng Rec 71:72-3 Ja 16 '15  
 Operating records of Atlanta sewage treatment plant show adequate degree of purification. C. C. Hommon. II Eng Rec 72:4-7 J 1 8 '15  
 Remodeling of septic tanks into Imhoff tanks eliminates odors from land irrigation. II diag plan Eng Rec 71:747-8 Je 12 '15
- Iminoacetoneitrile**  
 New synthesis of iminoacetoneitrile and its conversion to hydrazinodiacetic acid. J. R. Bailey and D. F. Snyder. Am Chem Soc J 87:935-42 Ap '15
- Immigrants**  
 Measuring human intelligence: standardized tests used by the Public health service. H. A. Knox. II Sci Am 112:52-3+ Ja 9 '15  
 See also English language (for foreigners)
- Immigration**  
 War and immigration; an unintentional experiment in restriction. Sci Am 113:244 S 18 '15
- Imposture**  
 See also Forgery; Fraud
- Incandescent electric lamps.** See Electric lamps, Incandescent
- Incandescent lighting.** See Electric lighting, Incandescent; Gas lighting, Incandescent; Gas mantles
- Incinerators.** See Refuse incinerators
- Inclined elevators.** See Elevators, Inclined
- Income**  
 See also Wages
- Income tax**  
 Extending the inquisition. J Account 19:50-2 Ja '15  
 Income tax amendment. J Account 19:292-4; 20:217-19 Ap, S '15  
 Income tax department. See monthly numbers of Journal of accountancy  
 Return of annual net income by corporations. W. F. Weiss. J Account 19:260-7 Ap '15
- Incubators, Bacteriological.** See Bacteriological incubator
- Index plate**  
 Making an index plate. G. H. Gardner. Mach 21:669 Ap '15
- Indexing**  
 Card index and what it means. J. J. Reynolds. Elec Ry J 46:815-18 O 16 '15  
 Engineering libraries. L. B. Krause. Ry R 56:356 Mr 13 '15
- Filing and indexing of office computations.** F. H. Jones. Eng Rec 72:128-9 J 1 31 '15
- Growth of engineering libraries and need of indexes.** Ry R 56:189-91 F 6 '15
- Growth of engineering libraries and the need of indexes.** H. W. Wilson. Ry R 56:430 Mr 27 '15
- Indexing technical literature.** W. G. Lohmeyer. II Mach 21:901-3 J 1 '15  
 See also Files and filing (documents)
- Indexing (machine work)**  
 Compound indexing on the milling machine. J. A. Hinckley. Mach 21:1005 Ag '15  
 Problem in slotting and indexing. D. A. Hampson. II diag Mach 22:135-6 O '15
- Indexing fixtures**  
 Turret indexing mechanisms. A. A. Dowd. II diag Mach 21:797-801 Je '15
- India**  
 Technical training in India. Engineer 120:429-30 N 5 '15
- Bridges**  
 Design and construction of the Lower Ganges bridge in India. II diag map Eng & Contr 42:478-81 N 18 '14  
 Hardinge bridge over the lower Ganges. F. C. Coleman. II diag Eng N 73:1160-4 Je 17 '15
- Commerce**  
 British India. H. D. Baker and others. U S Sp Cons Rep 72:1-572 '15  
 Hour of America's trade opportunity in India. T'ishi Bhutia Kywagh Hla'. Am Ind 16:25-7 Ag '15  
 Marketing cotton goods in India. Textile World 48:374-6 Ja '15
- Economic conditions**  
 British India. H. D. Baker and others. II U S Sp Cons Rep 72:1-572 '15
- Industries and resources**  
 Ancient sedimentary iron ores of British India. C. M. Weld. maps Econ Geol 10:435-52 J 1 '15
- Railroads**  
 See Railroads—India
- Indian lands**  
 United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94: pt 2, 952-1037 '15
- Indiana**  
 Indiana desert. H. Maxwell. II Sci Am S 80: 248-50 O 16 '15
- Indiana electric light association**  
 7th annual convention, Terre Haute, September 8-10. Elec R & W Elec'n 67:534-6 S 18 '15  
 7th annual convention, Terre Haute, Sept. 8-10. Elec W 66:566-7, 626-7 S 11-13 '15
- Indiana engineering society**  
 Annual meeting, Indianapolis, Jan. 21, 23, 1915. Eng N 73:182 Ja 28 '15
- Indiana sanitary and water supply association**  
 8th annual meeting, Indianapolis, Feb. 23-24, 1915. Eng N 73:455 Mr 4 '15
- Indiana state association of master plumbers**  
 19th annual convention, La Porte, March 8-10. Dom Eng 70:344-7 Mr 13 '15  
 Three day meeting opened at La Porte. Metal Work 83:440-2 Mr 19 '15
- Indianapolis, Indiana**  
**Floods**  
 Flood-protection work on Fall creek at Indianapolis, Ind. L. F. Wertz. II diag map Eng N 72:1120-3 D 3 '14  
 High levees will protect Indianapolis from floods. II map Eng Rec 72:560-2 N 6 '15  
 Indianapolis flood protection. II map Eng N 74: 961-5 N 18 '15
- Sewerage**  
 Improvement of Pogue's Run. II plans Munic Eng 48:236-9 Ap '15  
 Indianapolis builds million dollar storm-water drain under railroad yards. II Eng Rec 71:560-1 My 1 '15
- Water supply**  
 Indianapolis pumping station designed for continuous service. Eng Rec 71:208 F 13 '15

## Indians

## Languages

Visible speech; eye seeing and the rule measuring the difference between sounds. A. L. Kroeber. *Il diag* Sci Am 112:471 My 22 '15

## Indians of North America

## Social life and customs

Indian and nature; the basis of his tribal organization and rites. A. C. Fletcher. *Sci Am S* 80:314-15 N 13 '15

## Indians of South America

Roosevelt-Rondon scientific expedition. L. E. Miller. *Il Sci Am S* 79:268-70 Ap 24 '15

## Indicator diagrams

Comment on diagrams. H. H. Sawers; V. Bonn. *Power* 40:815 D 8 '14

Indicator diagrams from blowing cylinder. C. E. Sampson. *diag Power* 42:551 O 19 '15

Notes on indicator diagrams. A. R. Nottingham. *Power* 41:309-10 Mr 2 '15

## Indicators

Adjustable stop on O'Kill indicator. *Il diag Automobile* 33:375 Ag 26 '15

Electric water level indicator with distant reading. G. Schmidt. *diag plan Am Soc M E J* 37:45-6 Ja '15

Indicator reducing motion. H. G. Boutell. *Il Ry Age (Mech ed)* 39:563 N '15

Influence of indicator connecting pipes. T. W. Morley. *diag Power* 41:622-3 My 4 '15

Lamp slip indicator. F. Bedell. *Elec R & W Elec'n* 85:1224 D 26 '14

Multiple-unit boiler control. E. F. Fisher. *diags Power* 42:378-80 S 14 '15

Power-factor indicator. J. A. Randolph. *diags Power* 40:836-8 D 15 '14

Use of optical indicators for checking defects in functioning of motors. *diags Automobile* 33:976-9, 1018-19 N 25-D 2 '15

## Indicators and test papers

Indicator in pyroligneous acid. J. M. Johlin. *J Ind & Eng Chem* 7:596 J1 '15

Natural indicators. H. W. Brubaker. *Am Chem Soc J* 36:1925-8 S '14

Radiometric measurements of the ionization constants of indicators. E. J. Shaeffer, M. G. Paulus, and H. C. Jones. *diags Am Chem Soc J* 37:776-807 Ap '15

Radiometric measurements of the ionization constants of indicators. M. G. Paulus, J. F. Hutchinson and H. C. Jones. *Am Chem Soc J* 37:1694-1704 J1 '15

## Indigo

Cultivating Chinese indigo. G. E. Anderson. *Textile World* 49:381 Je '15

Indigotin content of some Japanese indigos. S. Sato. *J Ind & Eng Chem* 7:675-6 Ag '15

## Indigo, Artificial

Artificial indigo made in the United States. *Met & Chem Eng* 13:773-4 N 1 '15

Development of artificial indigo. *Textile World* 48:511 F '15

## Indo-China

## Commerce

China and Indo-China markets for American lumber. F. H. Smith. *U S Bur For & Dom Com* 104:1-39 '15

## Inductance

Effective resistance and inductance of iron and bimetallic wires. J. M. Miller. *diags U S Bur Stand Bul* 12:307-67 N 8 '15

## Induction coils

Large induction coil of novel design. *Il Sci Am* 113:250-1 S 18 '15

Spark-plug ignition systems. A. H. Israel. *diags Power* 41:268-60 F 23 '15

See also Electric transformers; Electromagnets

## Inductive interference. See Electric lines—Inductive interference

## Industrial accidents. See Accidents, Industrial

## Industrial arbitration. See Arbitration, Industrial

## Industrial arts

See also Architecture; Bookbinding; Brewing; Building; Business; Canning and preserving; Chemical engineering; Chemistry, Tech-

nical; Commerce; Dyes and dyeing; Electric engineering; Engineering; Engraving; Factories; Foundry practice; Inventions; Machine shop practice; Machinery; Metallurgy; Painting, Industrial; Patents; Photography; Plumbing; Pottery; Printing; Tanning

## Industrial betterment

Co-operative spirit and industrial peace. F. B. Gilbreth and L. M. Gilbreth. *Iron Age* 96:528-30 S 2 '15

Enlarging the worth of the worker and the perspective of the employer. J. P. Channing. *Il Am Inst Min E Bul* 99:539-38 Mr '15; Excerpt (Student engineers teach workmen). *Iron Age* 95:554-5 Mr 11 '15; Discussion. *Am Inst Min E Bul* 101:1086-9 My '15

How to keep men in your employ. W. A. Grieves. *Iron Tr R* 57:488-9+ S 9 '15

Human factor in production. A. A. Dowd. *Iron Tr R* 55:1186-+ D 24 '14

Labor problems in scientific management. *Iron Age* 94:1369-72 D 10 '14

More about the human factor. D. M. Myers. *Eng M* 49:801-3 S 15

New certificate of character for manufacturers. E. G. Valentine. *Ind Eng* 15:40-3 F '15

Teaching human engineering. F. H. Rindge, jr. *Eng N* 73:577-8 Mr 25 '15

See also Employees; Factory sanitation; Garden cities; Housing problem; Industrial education; Profit sharing; Safety devices and measures; Scientific management; Welfare work in industry

## Industrial buildings

Economical industrial buildings. North East, Pa. *Il Iron Tr R* 57:484 S 9 '15

Hallenbeck-Hungerford building. *Il plan Arch & Bldg* 47:69-72 F '15

Some industrial buildings. G. C. Nimmons. *Il plans Arch Rec* 38:228-45 Ag '15

See also Department stores; Factories; Foundries

## Industrial counselor and the industrial audit.

R. G. Valentine. *Iron Age* 94:1369-70 D 10 '14

## Industrial education

Boston symposium on employment and education. *Am Soc M E J* 37:277-81 My '15

Educational scrap heap and the blind alley job. L. W. Dooley. *Sci Am S* 79:170-1 Mr 13 '15; Excerpts. *Il Sci Am* 113:247 Mr 13 '15

Industrial education again. E. H. Fish. *Power* 41:207-8 F 9 '15

Master mechanics to teach in public schools. W. Wirt. *Metal Work* 33:841 Je 11 '15

Practicing engineers and industrial education. F. G. Bonser. *Eng N* 72:1133-4 D 8 '14

Trade school idea at Gary, Ind. *Il Bldg Age* 37:28-8 S '15

Trade training and world commerce. H. E. Miles. *Am Ind* 15:19-20 F '15

Training for the industrial side of engineering. A. P. M. Fleming. *Inst E E J* 53:566-73; Discussion. 53:574-80 Ap 15 '15

Training of shop teachers for industrial schools. H. E. Speece. *Mach* 22:47-8 S '15

See also Apprentices; Corporation schools; Engineering education; Schools and shops; Cooperation of Technical education; Trade schools; Vocational education; also Berea college; Hampton institute

## Exhibitions

Industrial education exhibition. *Il Am Ind* 15:42-4 Je '15

## Industrial electric heating association

Industrial electric heating association formed at Toledo on May 1. *Elec R & W Elec'n* 66:855 My 8 '15

## Industrial fellowships

Unique system of service to industry; Mellon Institute of Industrial Research. J. J. O'Connor. *Il Am Ind* 15:27-8 O '15

## Industrial locomotives. See Locomotives, Industrial

## Industrial plants

Heating and ventilating industrial plants. E. L. Hogan. *Metal Work* 33:263-5 F 12 '15

Same. *Dom Eng* 70:239-41 F 20 '15

See also Electric plants; Factories; Foundries; Iron works; Machine shops; Metallurgical plants; Steel works

**Industrial railroads.** See Railroads, Industrial.  
**Industrial relations, Commission on.** See United States—Commission on Industrial Relations.  
**Industrial relations committee.**  
 Railroad brotherhoods busy. W. L. Stoddard. Ry Age 59:1016 N 28 '15

#### Industrial research

**Administration of industrial research laboratories.** Met & Chem Eng 13:922 D 1 '15  
**Co-operation between university and industry.** Met & Chem Eng 13:885-7 D 1 '15  
**Description of the research laboratory of the General electric company.** L. A. Hawkins. J Gen Elec R 18:416-27 Je '15  
**Doing without Europe.** Sci Am 112:176, 196, 223 F 20-Mr 6 '15  
**Education for research.** W. H. Walker. J Ind & Eng Chem 7:2-4 Ja '15  
**Engineering experiment station of the University of Illinois.** E. B. Paine. Am Inst E E Pro 34:2421-7 O '15  
**England's tardy recognition of applied science.** W. R. Whitney. J Ind & Eng Chem 7:819-22 O '15  
**National council of science.** Engineer 120:109 JI 30 '15  
**Object and work of the Mellon Institute.** R. F. Bacon. J Ind & Eng Chem 7:343-7 Ap '15  
**Relation of research to the progress of manufacturing industries.** W. R. Whitney. Gen Elec R 18:868-72 S '15; Same. Eng & Contr 48:537-9 J 18 '15  
**Research.** W. R. Whitney. Gen Elec R 18:1012-14 N '15  
**Research and industry.** Sci Am 112:616+ Je 19 '15  
**Research and progress in American manufacturing.** R. F. Bacon. Sci Am S 80:334-6 N 20 '15  
**Research in chemicals industry.** C. F. Burgess. Met & Chem Eng 13:921 D 1 '15  
**Research work at the National cash register company.** H. G. Dorsey. J Sibley J 29:115-21 Ja '15  
**Research work at the University of Pittsburgh.** S. R. Scholes. Foundry 49:237 Je '15  
**200-mile artificial transmission line.** C. E. Magnusson, J. Gooderham and R. Rader. J diags Elec W 66:1545-9 Je 12 '15  
**War, industrial research, and the American manufacturer.** Sci Am 111:518 D 26 '14  
*See also* Chemical research; Chemistry, Technical; Laboratories; Scientific research

#### Industrial service movement

**Enlarging the worth of the worker and the perspective of the employer.** J. P. Channing. J Am Inst Min E Bul 93:529-38 Mr '15; Excerpt (Student engineers teach workmen). Iron Age 95:554-5 Mr 11 '15; Discussion. Am Inst Min E Bul 101:1095-9 My '15  
**Teaching human engineering.** F. H. Rindge, Jr. Eng N 73:577-8 Mr 25 '15

**Industrial towns.** See Model towns

#### Industry

**How to create industrial leaders; chapter from "Industrial leadership."** H. L. Gantt. Eng M 50:428-37 D '15  
**Individual and corporate development of industry.** C. P. Steinmetz. Gen Elec R 18:813-16 Ag '15  
**Industrial energy as a military weapon.** J. R. Finlay. Met & Chem Eng 13:547-50 S 1 '15; Abstract. Eng M 50:96-7 O '15  
**Industrial leadership.** H. L. Gantt. Iron Age 95:196-7 Ja 21 '15; Same cond. Metal Work 84:472 O 8 '15

*See also* Efficiency, Industrial; Government regulation of industry; Labor and laboring classes; Manufactures; also subdivision Industries and resources under names of countries

#### Infection

**Prevention of infection.** T. Darlington. Iron Tr R 56:770 Ap 15 '15

#### Infectious diseases

*See* Typhoid fever; Typhus fever; Yellow fever

#### Inflammable liquids

**Storage and handling of gasoline.** Sci Am 112: 356 Ap 17 '15

*See also* Gasoline; Petroleum

#### Inflammable mixtures

**Decomposition of ammonia and the chances of explosions.** F. L. Fairbanks. Power 42: 715-17 N 23 '15

**Inflammability of mixtures of gasoline vapor and air.** G. A. Burrell and H. T. Boyd. diags U S Bur Mines Tech Pa 115:1-16 '15; Same cond. J Ind & Eng Chem 7:414-17 My '15; Summary. Met & Chem Eng 13:802 N 1 '15  
**Influence of temperature and pressure on the explosibility of methane-air mixtures.** G. A. Burrell and I. W. Robertson. diag J Ind & Eng Chem 7:417-19 My '15

#### Infra-red rays

**Air transparency for infra-red rays; application of these rays to telephotography.** G. Michaud and J. F. Tristan. J Sci Am 111: 521 D 26 '14  
**Controlling infra-red emission.** W. W. Coblenz. Elec W 66:1155-6 N 20 '15

**Glasses for protecting the eyes from infra-red rays.** W. W. Coblenz. J Fr Inst 179:579-80 My '15

#### Inglewood, California

##### Politics and government

**Experience at Inglewood, with the city manager form of government.** P. R. Kressley. Eng & Contr 48:465-6 N 11 '14

#### Initial letters

**Proper use of initials.** J. L. Frazier. Inland Ptr 55:499-502 JI '15

#### Injectors

**Boiler-compound injector made up of pipe fittings.** T. W. Reynolds. plan Elec W 66:813 O 9 '15

**Exhaust injectors.** R. W. Rogers. diag Ry Age (Mech ed) 89:514 O '15

**Injuries.** See Accidents, Industrial; First aid in illness and injury; Personal injuries; Workmen's compensation

#### Ink

**Composition, properties, and testing of printing inks.** bibliog U S Bur Stand Circ 53:1-85 '15

**Diffusing media; papers and inks.** Illum Eng Soc 10:379-87 no 5 '15

**Printing inks.** J Fr Inst 179:215-16 F '15  
**Structure of a simple red ink.** Inland Ptr 56: 117 O '15

#### Inosite

**Inosite and pinite and some of their derivatives.** E. G. Griffin and J. M. Nelson. Am Chem Soc J 37:1552-71 Je '15

#### Insanity

**Mental tests of dementia.** B. Hart and C. Spearman. Sci Am S 80:206-8 S 25 '15

**Psychoanalytic movement; its services in the prevention of insanity.** J. J. Putnam. Sci Am S 78:391, 402 D 19-26 '14

#### Inscriptions

**How we got our alphabet; the alphabetic discoveries.** W. Rice. Inland Ptr 55:531-2 JI '15

#### Inscriptions, Cuneiform

**Curiosities of bygone ages: relics from New Mexico and from Bible lands.** JI Sci Am 112: 87+ Ja 23 '15

*See also* Cuneiform writing

#### Insecticides

**Arsenates of lead.** H. V. Tartar and R. H. Robinson. Am Chem Soc J 36:1843-53 S '14

**Valuation of commercial arsenates of lead.** R. H. Robinson and H. V. Tartar. J Ind & Eng Chem 7:499-502 Je '15

#### Insectivorous plants

**Are plants cruel?** S. L. Bastin. JI Sci Am 112: 632-3 Je 26 '15

#### Insects

**Ears and sound-producing mechanisms of insects.** H. Bastin. JI Sci Am 111:527 D 26 '14

**Insects' nests.** JI Sci Am S 80:312-13 O 2 '15

**Sense of smell in insects.** Sci Am S 79:80 Ja 30 '15

**Verdict of the insects as to time of death.** D. Waterson. Sci Am 113:11 JI 3 '15

*See also* Borers (animals); Flies; Lac insect; Mosquitoes

#### Insects, Injurious and beneficial

**Bird enemies of forest insects.** W. L. McAtee. JI Am For 21:681-91 Je '15

- Insects, injurious and beneficial—Continued**  
 Brookline protects birds. C: B. Floyd. *Il Am* For 21:792-6 J1 '15  
 Protection against insect pests. *Sci Am S* 80: 130 Ag 28 '15
- Inspection**  
 Can we improve the inspection system? D. R. Stevens. *Il Horseless Age* 36:65-8, 101-4 J1 21-28 '15  
 How the product of the foundry is inspected. E: Godfrey. *Foundry* 43:222-4 Je '15; Same cond. *Iron Age* 95:898-9 Ap 22 '15  
 Inspecting goods after they are received; the buyer's rights and liabilities. E. J. Buckley. *Elec R & W Elec'n* 67:416 S 4 '15; Same (Right of buyer to reject goods) *Metal Work* 84:355 S 10 '15  
 Inspection system for machine shops. W: B. Wessels. *Mach* 21:451-3 F '15  
 Operating a foundry on a scientific basis. F: A. Parkhurst. *Il Foundry* 43:107-10. Mr '15  
 Relation of the inspection department to the management. F. B. Corey. *Ind Eng* 15:17-18 Ja '15; Same. *Iron Age* 95:586-7 Mr 11 '15  
*See also* Boiler inspection; Bridge inspection; Car inspection; Electric inspection; Fire inspection; Locomotives—inspection; Mine inspection; Waterworks—inspection
- Institute of heating and ventilating engineers**  
 Summer meeting, Leamington, June 22. *Heat & Ven* 12:47-8 Ag '15
- Institute of metals**  
 Annual general meeting, London, March 18-19. *Engineer* 119:309-10 Mr 26 '15  
 Annual meeting, London, March 18-19. *Foundry* 43:193-4 My '15  
 Autumn meeting, Sept. 17. *Engineer* 120:298-9 S 24 '15
- Institute of metals, American.** *See* American institute of metals
- Institute of paving brick manufacturers**  
 Brickmakers organize to improve their art. *Munic Eng* 49:119-20 S '15  
 Organization. *Good Roads n s* 10:159 S 4 '15
- Institution of civil engineers**  
 Presidential address. A. Ross. *Engineer* 120: 480-1 N 5 '15
- Institution of electrical engineers**  
 Inaugural address of president. J: Snell. *Inst E E J* 53:1-13 D 1 '14  
 Report of the council for presentation at the annual general meeting of 27 May, 1915. *Inst E E J* 53:722-35 My 15 '15
- Institution of mechanical engineers**  
 Annual general meeting. *Engineer* 119:197-8 F 26 '15  
 Manchester meeting, 1915. *Engineer* 120:417 O 29 '15
- Institution of mining engineers**  
 General meeting in London, June 10. *Engineer* 119:610-11 Je 18 '15
- Institution of water engineers**  
 Winter meeting. *Engineer* 118:588 D 18 '14
- Instruments.** *See* Astronomical instruments; Drawing instruments; Electric instruments; Measuring instruments; Surgical instruments; Surveying instruments
- Insulating tape**  
 Comments on insulating tape. G: E. Austin. *Elec Ry J* 45:888 My 8 '15
- Insulation**  
 Apparatus for testing approximate breaking strength of pin insulators. *diag Elec W* 64: 1114 D 5 '14  
 Automatic section insulators for mine trolley wires. plan *Elec W* 65:1207 My 8 '15; *Elec Ry J* 45:352 My 1 '15  
 Combination cable insulator and splicing sleeve. *Il Elec Ry J* 46:114-15 J1 17 '15  
 Comparative insulation requirements in the United States and European countries. *Elec R & W Elec'n* 65:1133 D 12 '14  
 Dielectric properties of different insulating materials; abstract. K. W. Wagner. *diag Elec W* 65:1044-5 Ap 24 '15  
 Discussion on transmission lines. (See Proceedings for June and July, 1915) *Am Inst E E Pro* 34:3117-26 D '15  
 Distributing potential over a string of insulators. J. L. Brenneman and H. M. Crothers. *diag Elec W* 64:1095-9 D 5 '14
- Economy in the operation of 55,000-volt insulators.** M. T. Crawford. *Il Am Inst E E Pro* 33:1159-64 Ag '14; Discussion. 34:155-60 Ja '15  
 Effect of altitude on the spark-over voltages of bushings, leads and insulators. F. W. Peek, Jr. *Il diag Am Inst E E Pro* 33:1377-86 D '14; Same. *Gen Elec R* 18:137-42 F '15; Discussion. *Am Inst E E Pro* 34:1328-49 Je '15  
 Effect of insulating resistance on armored cables; abstract. A. Gavand. *Elec W* 65:1684 Je 26 '15  
 Effect of transient voltages on dielectrics. F. W. Peek, Jr. *Il Am Inst E E Pro* 34:1695-1747 Ag '15  
 Electric perforation strength of liquids, semi-liquids and solid insulation as affected by pressure; abstract. F. Kock. *Elec W* 65:919 Ap 10 '15  
 Electrical characteristics of solid insulations. F. W. Peek, Jr. *Gen Elec R* 18:1050-7 N '15  
 Electrical porcelain. I. Testing with a high-frequency oscillator. II. The problematical points of manufacture. III. Experiences and experimental investigations. E. E. F. Creighton. *Il Am Inst E E Pro* 34:753-841 My '15; Abstract and discussion. *Elec R & W Elec'n* 66:395-6 F 27 '15; *Elec W* 65:523 F 27 '15; Discussion. *Am Inst E E Pro* 34: 2622-45 N '15  
 Experimental data concerning the safe operating temperature for mica armature-coil insulation. F. D. Newbury. *diag Am Inst E E Pro* 34:2555-72 O '15; Abstract. *Elec W* 66: 1205-6 N 27 '15  
 Four years' operating experience on a high-tension transmission line. A. Bang. *diag pla Am Inst E E Pro* 34:1425-45 J1 '15; Abstract. *Elec W* 66:10-11 J1 3 '15  
 High frequency; breakdown values of oiled pressboard. F. W. Peek, Jr. *Gen Elec R* 18: 934 S '15  
 High-frequency oscillator for porcelain-insulator testing. *Il diag Elec R & W Elec'n* 66: 880-1 My 8 '15; *Elec W* 65:1207 My 8 '15; *Ry R* 56:668 My 15 '15  
 High-tension power transmission problems discussed at December A. I. E. E. meeting. *diag Elec Ry J* 44:1348 D 19 '14  
 High-voltage transmission at high altitude. P. H. Thomas. *Il diag plan Elec W* 65:30-3 Ja 2 '15  
 Hot and cold water test for insulators. *Elec W* 66:92 J1 10 '15  
 Insulating properties of solid dielectrics. H. L. Curtis. *diag U S Bur Stand Bul* 11:359-420 My 10 '15; Excerpt (Volume resistivity table) *Elec R & W Elec'n* 66:171 Ja 23 '15  
 Insulation for railway motors. R. E. Hellmund. *Elec Ry J* 45:508 Mr 13 '15  
 Insulation testing. G. B. Shanklin. *Gen Elec R* 18:1008 O '15  
 Insulator depreciation and effect on operation. A. O. Austin. *Il Am Inst E E Pro* 33:1863-76 D '14; Discussion. 34:1328-49 Je '15  
 Insulator depreciation and spark-over voltages; abstracts and discussion of papers by F. W. Peek, Jr. and A. O. Austin. *Elec R & W Elec'n* 65:1187-8 D 19 '14; *Elec W* 64:1190-1 D 19 '14  
 Insulator performance from operating viewpoint. E. P. Peck. *Il Elec W* 66:1077-9 N 13 '15  
 Investigation of dielectric losses with the cathode ray tube. J. P. Minton. *Il Am Inst E E Pro* 34:1115-65 Je '15  
 Law of corona and spark-over in oil. F. W. Peek, Jr. *Gen Elec R* 18:821-7 Ag '15  
 Leakage prevention by shielding, especially in potentiometer systems. W. P. White. *diag Am Chem Soc J* 36:2011-20 O '14  
 Leakage through insulation, and how it may show up in repair work. E. C. Farham. *Elec W* 66:979 O 30 '15  
 Maintaining high insulation resistance. H. M. McLellan. *diag Power* 41:365 Mr 16 '15  
 Maintenance of line insulation. *Elec W* 65: 586-7 Mr 6 '15  
 Overhead electrolysis and porcelain strain insulators. S. L. Foster. *Il Am Inst E E Pro* 34:1549-58 Ag '15; Abstract. *Elec Ry J* 46: 582-3 S 18 '15

**Insulation—Continued**

- Process of impregnating coils; and a large, modern impregnating plant. R. Reid. *Il Gen Elec R* 18:48-51 Ja '15
- Provisional specification for insulator testing covering inspection and tests of high-tension line insulators of porcelain, for over 25,000 volts. *Am Inst E E Pro* 84:1033-45 My '15
- Relation of insulator resistance to puncture voltage. *Elec W* 66:304 Ag 7 '15
- Rogers tree insulator. *Il Elec R & W Elec'n* 61:907-8 N 13 '15
- Slot insulation design, with comparison between the unit dielectric stresses in the slot insulation of a low-voltage alternator and those in a high-voltage machine. H. M. Hobart. *Gen Elec R* 18:366-71 My '15
- Specification for insulator testing; discussion. *Am Inst E E Pro* 84:300-12 F '15
- Temperature limits for mica insulation; discussion. *Elec W* 66:1180 N 20 '15
- Temperature of mica insulation; discussion. *Elec R & W Elec'n* 67:942 N 20 '15
- Test of a direct-current motor. H. C. Lightfoot. *diags Elec R & W Elec'n* 67:240-6 Ag 7 '15
- Testing electrical porcelain; abstract. A. Chernyshev and C. A. Butman. *Elec W* 65:1554-5 Je 12 '15
- Volume resistivity and surface resistivity of insulating materials. H. L. Curtis. *diag Gen Elec R* 18:996-1001 O '15
- Zinc cables insulated with reclaimed rubber. *Elec W* 65:1614 Je 19 '15
- See also* Electric cables; Electric resistance; Electric wire and wiring
- Insulation (heat)**
- Conduits and insulation for heating pipes. C. L. Hubbard. *diags Dom Eng* 72:252-3 Ag 28 '15
- Diatom heat-insulating brick. *Met & Chem Eng* 13:129 F '15
- Insulate huge concrete building for cold storage in Chicago. *Eng Rec* 73:662-3 N 27 '15
- Maintenance of insulation for low temperatures. R. L. Shipman. *Power* 42:118-19 J1 27 '15
- New heat-insulating material. *Eng N* 73:878-9 My 6 '15
- Preparation and properties of fibrox; abstracts. E. W. Weintraub. *Met & Chem Eng* 13:815 My '15; *Eng M* 49:415 Je '15
- Producing magnesia pipe and boiler covering. F. W. Bartlett. *Power* 42:436-7 S 21 '15
- Thermal insulation of high-temperature equipment. P. A. Boeck. *diags Am Inst Min E Bul* 104:1539-50 Ag '15; *Excerpts, Iron Age* 96:353-4 Ag 12 '15; *Sci Am S* 80:335 N 13 '15; *Discussion, Am Inst Min E Bul* 108:2518-19 D '15
- Thermal-insulation tests of electric ovens. A. E. Kennelly, F. D. Everett; and A. A. Prior. *diags Elec W* 65:779-82 Mr 27 '15
- See also* Steam pipe coverings
- Insurance, Employers' Liability**
- Economy in insurance methods of employers. *Iron Age* 95:1013-14 My 6 '15
- Insurance, Fire**
- Insurance as an aid to engineers. N. H. Daniels. *Boston Soc C E J* 2:91-108 Mr '15; *Discussion, F. B. Sanborn; N. H. Daniels.* 2:199-202 My '15
- Insurance methods for payment of large losses. J. P. Gray. *Textile World* 49:228-30 My '15
- Profitable specialty: building loss adjuster for fire insurance companies. G. D. Crain, Jr. *Bldg Age* 37:61-2 F '15
- Three kinds of insurance companies. W. H. Forse, Jr. *Elec Ry J* 45:262-3 Ag 14 '15
- Values of printing offices. C. S. Brown. *Inland Ptr* 58:43-5 O '15
- Insurance, Health**
- Protection of the strong; working of German insurance laws for the protection of the poor. *Sci Am S* 79:343 My 29 '15
- Insurance, Liability**
- Reciprocal liability insurance for utilities and other electrical interests. *Elec R & W Elec'n* 66:1055 Je 5 '15

**Insurance, Life**

- Group insurance offer in Brooklyn. *Elec Ry J* 46:252 Ag 7 '15
- See also* Annuities
- Insurance, Sickness. See Insurance, Health**
- Insurance, State and compulsory**
- Protection of the strong; working of German insurance laws for the protection of the poor. *Sci Am S* 79:343 My 29 '15
- Intake gates**
- Improved intake for irrigation water from a silt laden stream. A. L. Harris. *diag Eng & Contr* 42:184-5 Ag 19 '14
- Integrating sphere**
- Integrating sphere and arc lamp photometry; with discussion. N. K. Chaney and E. L. Clark. *Illum Eng Soc* 10:1-37 no 1 '15
- Intemperance. See Temperance**
- Interborough rapid transit company, New York**
- Comparative statement of income, profit and loss for the years ended June 30, 1914 and 1915. *Elec Ry J* 46:606-7 S 18 '15
- Interchange of cars. See Freight cars, Interchange of**
- Interchangeable mechanism**
- Interchangeability. J. P. Brophy. *Mach* 21:967-8 Ag '15
- Interchangeable locating and clamping accessories. *Il diags Mach* 21:580-1 Mr '15
- Interest**
- Calculating premiums on bonds. *Munic J* 38:426 Ap 1 '15
- Depreciation, interest and manufacturing cost. W. C. Wright. *J Account* 20:861-4 N '15
- Interest rates on public utility bonds. H. S. Welsh. *Elec Ry J* 45:137-8 Ja 16 '15
- See also* Annuities; Discount
- Interferometer**
- Measuring one twenty-millionth of an inch. E. Kell. *Il plan Sci Am* 112:363-4 Ap 17 '15
- Use of the interferometer for the analysis of solutions. L. H. Adams. *diags Am Chem Soc J* 37:1181-94 My '15
- Interior decoration. See House decoration**
- Interlocking plants**
- Clock-work time-lock for electric interlocking machines. *Il Ry Age* 59:699-700 O 15 '15
- Electric interlocking at Adelaide, South Australia. C. G. Pilkington. *Il diag Ry Age* 59:936-8 N 19 '15
- Electric interlocking at Aulon, Tenn. *diag Ry Age* 58:932-3 Ap 30 '15
- Electro-mechanical interlocking. *Ry Age* 59:414 S 3 '15
- Electro-mechanical interlocking at Trenton. W. M. Post. *Il diags Ry Age* 59:419-20 S 3 '15
- Interlocking at North Philadelphia. W. M. Post. *Il Ry Age* 58:136-8 Ja 22 '15
- Interlocking installation on Pacific electric. *Il Elec Ry J* 45:946-7 My 15 '15
- Interlocking tower of stucco on hollow tile, Rock Island lines. E. G. Zorn. *Il diags Ry R* 57:108-9 J1 24 '15
- Internal combustion engines. See Gas and oil engines**
- Internal gear. See Motor trucks—Gearing**
- International association for the prevention of smoke. See Smoke prevention association**
- International association of chiefs of police**
- 22d annual convention, Cincinnati, May 26-27. *Munic J* 38:854-5 Je 17 '15
- International association of fire engineers**
- 43d annual convention, Cincinnati, August 31-September 3. *Munic J* 39:446-8 S 16 '15
- International association of municipal electricians**
- 20th annual convention, Cincinnati, Aug. 24-27. *Elec R & W Elec'n* 67:428-30 S 4 '15
- 20th annual convention, Cincinnati, Aug. 24-27. *Elec W* 66:445-6, 513-14 Ag 28, S 4 '15
- 20th annual convention, Cincinnati, Aug. 24-27. *Munic J* 39:411-13 S 9 '15
- International engineering congress, San Francisco, 1915**
- Abstract of proceedings. *Il Power* 42:494-6 O 5 '15

**International engineering congress—Continued**

Abstract of the papers and discussions relative to railroads at San Francisco meeting. Ry Age 59:599-608 O 1 '15

Abstracts of papers. Elec Ry J 46:622-7 S 25 '15

Brief abstracts of papers. Am Soc M E J 37: v-xi N '15

Discussions on subjects pertaining to the electrical industry. Elec W 66:732-4 O 2 '15

Engineers hold successful congress. Iron Tr R 57:545-6 S 30 '15

Meetings of the ten sections of the congress. Eng N 74:713-15 O 7 '15

Opening session. Eng N 74:660-1 S 30 '15

Papers on metallurgy. Met & Chem Eng 13: 655-62, 721-9 O 1-15 '15

Report of electrical and related sessions. Elec R & W Elec'n 67:614-18 O 3 '15

Some of the mechanical and metallurgical subjects. Iron Age 96:780-2 S 30 '15

International gas congress, San Francisco, 1915

Opening address. A. C. Humphreys. Am Gas Light J 103:209-10 O 4 '15

Plans for the meeting in September. E. C. Jones. Am Gas Light J 103:161-2 Mr 15 '15

International institute of agriculture

New internationalism in agriculture. H. C. Price. Sci Am S 80:109 Ag 14 '15

International law

War and the British engineer; trading with the enemy; a comparison. Engineer 119: 114-15 Ja 29 '15

See also Peace; War

International nickel company

Canada's nickel trouble. Eng & Min J 99:30-1 Ja 2 '15

International railroad master blacksmiths' association

23d annual convention, Philadelphia, Aug. 17-19. Ry Age 59:387-9 Ag 27 '15

23d annual convention, Philadelphia, Aug. 17-19. Ry Age (Mech ed) 89:471-81 S '15

International railway fuel association

7th annual convention, Chicago, May 17-20. Ry Age 58:1054-61, 1113-19 My 21-28 '15

7th annual convention, Chicago, May 17-20. Ry Age (Mech ed) 89:271-83 Je '15

7th annual convention, Chicago, May 17-20. Ry R 56:696-703 My 22 '15

International railway general foremen's association

11th annual convention, Chicago, July 13-16. Ry Age 59:102-4, 155-8 Jl 16-23 '15

11th annual convention, Chicago, July 13-16. Ry Age (Mech ed) 89:417-26 Ag '15

11th annual convention, Chicago, July 13-16. Ry R 57:76-9, 118-20 Jl 17-24 '15

International typographical union

61st convention, Los Angeles. Inland Ptr 55: 833-5 S '15

Interrupters

Denatured electric current: an Italian device by which a heating circuit is useless for lighting. G. Pincherle. diag Eng M 48:789-40 F '15

Interstate commerce

Interstate commerce commission and its work. E. B. Clark. Ry Age 59:493-6 S 17 '15; Excerpts (Changes in the Interstate commerce law) Ry R 57:400-3 S 25 '15

Interstate commerce defined; remarks of Justice Day of Supreme court in South Covington & Cincinnati street railway case. Elec Ry J 45:150 Ja 16 '15

Interstate commerce transcends state law. A. P. Nevin. Am Ind 15:26-7 Ap '15

See also Railroads—Rates; Railroads and states—United States

Interstate commerce commission

Absentee landlordism and the commission. Ry Age 57:1072 D 11 '14

Annual report. Ry R 55:748-50; 56:20-4, 159-64 D 19, '14, Ja 2, 30 '15

Argument on authority of Interstate commerce commission to require reports of accidents and other statistics from urban railways. J. T. Beasley. Elec Ry J 44:1389-90 D 26 '14

Government regulation of railway operation. S. O. Dunn. Ry Age 58:184-7 Ja 29 '15

Instructions for roadway and track men on federal valuation; abstract of second tentative draft issued by Interstate commerce commission. Eng Rec 70:688-40 D 12 '14; Ry Age 58:62-4 Ja 8 '15

Interstate commerce commission and its work. E. B. Clark. Ry Age 59:493-6 S 17 '15; Same. Eng & Contr 44:273-6 O 6 '15

Interstate commerce commission refuses to decide international jurisdiction. Ry R 56: 665-6 My 15 '15

Private car lines not common carriers. Ry Age 58:1051-2 My 21 '15

Railway regulation handicapped by muddled official statistics. Ry R 56:130-1 Ja 23 '15

Recommendations of Interstate commerce commission and parts of report of general interest to electric railways. Elec Ry J 44: 1358-9 D 19 '14

Reorganization. Ry R 56:17-18 Ja 2 '15

Report of the chief inspector, division of safety. H. W. Belnap. Ry R 56:226-7 F 13 '15

Report on the Rock Island. Ry Age 59:823-7 Ag 20 '15

28th annual report. Ry Age 57:1086-7 D 11 '14

Valuation conference in Washington, March 22. Eng Rec 71:324-5 Mr 13 '15

Interurban railroads

1500-volt interstate interurban railway; O. L. & I. Ry. II map Elec Ry J 46:1073-4 N 27 '15

Interurban as an agency of transportation. J. F. McClure. Elec Ry J 46:1077-8 N 27 '15

Operation of the Pacific electric railway. II map Ry Age 59:225-9 Ag 6 '15

Seven years of operating experience of a single-phase interurban railway; Chicago, Lake Shore & South Bend railway. II map Elec Ry J 46:940-5 N 6 '15

See also Electric railroads

Intoxication. See Temperance

Intrenchments

In the trenches. G. Lenotre. Sci Am 112:416+ My 1 '15

Protecting the frontier. II Sci Am S 80:264 O 30 '15

Trench warfare; ten hours of trench digging for ten minutes of rifle fire. W. D. A. Anderson. II Sci Am 113:6-8 Jl 3 '15

Invar

Medal for the inventor of invar. Sci Am 112: 327+ Ap 3 '15

Inventions

Governmental indifference to invention. Sci Am 113:74-Jl 24 '15

Great inventions and the public. Sci Am S 80:170 S 11 '15

Greatest ten years of invention. Sci Am 112: 510 Je 5 '15

Inventions wanted. Sci Am 112:488 My 29 '15

Inventor's show at New York. II Sci Am 111: 528 D 26 '14

Nothing more to invent? Sci Am 113:334 O 16 '15

Patent office and invention since 1845. W. I. Wyman. Sci Am 112:533-4+ Je 5 '15

Practical devices and the lack of capital. C. E. Duryea. Sci Am 113:119 Ag 7 '15

Prizes for scientists. Sci Am S 80:228 O 9 '15

Seventy years of inventions. II Sci Am 112:511-20+ Je 5 '15

Tasks of German inventors in wartime. Sci Am 113:214+ S 4 '15

See also Inventors; Patents; Phonopticon

Inventories

Four-part factory inventory system. H. A. Russell. Iron Age 95:1218-25 Je 3 '15

Inventory for printers. Inland Ptr 54:692-3 F '15

Perpetual inventory in practical stores operation. J. B. Green. Eng M 48:879-88 Mr '15

Suggested form of inventory for valuation of common carrier property. D. F. Jurgensen. Assn Eng Soc J 55:129-33 O '15

Symposium on inventories and appraisals of properties. C. L. Cory; W. G. Vincent, Jr.; W. J. Norton. Am Inst E E Pro 34:2131-56 S '15

Valuation of merchandise inventories. J Account 18:461-3 D '14



**Inventors**

- Inventors and the war. *Sci Am* 113:17 J1 3 '15  
 Inventors' bank. *Sci Am S* 79:362 Ap 24 '15  
 Inventors too cautious. *Sci Am* 113:106 Ag 7 '15  
*See also* Inventions

**Investments**

- Investment banker and the engineer. C. A. Hobeln. *Assn Eng Soc J* 54:237-57 Je '15  
*See also* Annuities; Bonds; Securities

**Iodide**

- Permanganate and iodimetric determination of iodide in presence of chloride and bromide. P. L. Barnebey. *Am Chem Soc J* 37:1496-1507 Je '15

**Iodine**

- Free energy of iodine compounds. G. N. Lewis and M. Randall. *Am Chem Soc J* 86:2259-68 N '14  
 Iodine number of linseed and petroleum oils. W. H. Smith and J. B. Tuttle. *U S Bur Stand Tech Pa* 37:1-17 '14; *Same. J Ind & Eng Chem* 6:994-8 D '14  
 Study of the system: water, potassium iodide and iodine at zero degrees. G. Jones and M. L. Hartmann. *Am Chem Soc J* 37:241-58 F '15  
 Use of iodine as a dehydrating and condensing agent. H. Hibbert. *Am Chem Soc J* 37:1748-63 J1 '15  
 Vapor pressure of iodine between 50° and 95°. G. P. Baxter and M. R. Grose. *Am Chem Soc J* 37:1061-72 My '15

**Iodoanil**

- Action of nitric acid on iodoanil. L. Clarke and E. K. Bolton. *Am Chem Soc J* 36:1899-1908 S '14

**Ionization**

- Atoms and ions. J. J. Thomson. *Sci Am S* 79:274, 290-1, 310-11, 326-7, 346-7, 362-3 My 1-Je 5 '15  
 Electric strength of air. J. B. Whitehead. *Am Inst El E Pro* 34:843-65 My '15; Discussion. 34:2997-3005 D '15  
 Osmotic pressure and concentration in solutions of electrolytes, and the calculation of the degree of ionization. S. J. Bates. *Am Chem Soc J* 37:1421-45 Je '15  
 Photo-electricity: the intimate relations of light and electricity. J. A. Fleming. *Sci Am S* 80:18-19 J1 10 '15  
 Radiometric measurements of the ionization constants of indicators. E. J. Shaeffer, M. C. Paulus, and H. C. Jones. *diags Am Chem Soc J* 37:776-807 Ap '15  
 Radiometric measurements of the ionization constants of indicators. M. G. Paulus, J. F. Hutchinson and H. C. Jones. *Am Chem Soc J* 37:1694-1704 J1 '15  
 Theoretical and experimental consideration of electrical precipitation. A. F. Nesbit. *diags Am Inst El E Pro* 34:507-22 Ap '15; Discussion. 34:2646-52 N '15  
*See also* Radioactivity

**Ions**

- Action of certain colloids on ions during electrolysis. A. Mutscheller. *diags Met & Chem Eng* 13:353-7 Je '15  
 Atoms and ions. J. J. Thomson. *Sci Am S* 79:274, 290-1, 310-11, 326-7, 346-7, 362-3 My 1-Je 5 '15  
 Development in electromagnetism. E. Bloch. *Sci Am S* 79:366-7 Je 5 '15  
 Hydrogen- and hydroxyl-ion activities of solutions of hydrochloric acid, sodium and potassium hydroxides in the presence of neutral salts. H. S. Harned. *diag Am Chem Soc J* 37:2460-82 N '15  
 Larger ions in the air. J. A. Pollock. *Sci Am S* 80:75 J1 31 '15  
 Reactions of sodium ethylate with methyl iodide in absolute ethyl alcohol at 25°. H. C. Robertson, Jr. and S. F. Acree. *Am Chem Soc J* 37:1902-9 Ag '15  
 Reinterpretation of the reactions of sodium methylate and sodium ethylate with 1, 2-dinitrobenzene, and 1, 2, 4-dinitrochlorobenzene and 1, 2, 4-dinitrobenzene. S. F. Acree. *Am Chem Soc J* 37:1909-14 Ag '15

Relative migration velocities of the ions in complex electrolytes. A. Mutscheller. *Met & Chem Eng* 13:435-42 J1 '15

*See also* Dissociation; Electrochemistry; Electrolysis; Electrons; Ionization; Solution (chemistry)

**Iowa electrical contractors' association**

4th semi-annual convention, Keokuk, April 20-22. *Elec R & W Elec'n* 66:810 My 1 '15

**Iowa state association of master plumbers**

27th annual convention at Davenport. *Dom Eng* 70:151-3 Ja 30 '15  
 27th annual convention, Jan. 19-21, 1915. *Metal Work* 83:208-9 Ja 29 '15

**Iowa street & interurban railway association**

12th annual convention, Keokuk, April 22-23. *Elec Ry J* 45:839-41 My 1 '15

**Iquitos, Peru****Sanitary affairs**

Sanitation of Iquitos, Peru. G. M. Converse. *il Eng N* 73:201 F 4 '15

**Iron**

- Corrosion of iron. L. C. Wilson. *Eng M* 48:517-23, 667-74, 849-53; 49:58-66, 202-10 Ja-May '15  
 Determination of ferrous iron in silicates by titration with dichromate. O. L. Barnebey. *Am Chem Soc J* 37:1829-35 Ag '15  
 Effect of boron upon the magnetic and other properties of electrolytic iron melted in vacuo. T. D. Yensen. *il Ill U Eng Exp Sta Bul* 77:1-19 '15  
 Electrical resistance and critical ranges of pure iron. G. K. Burgess and I. N. Kellberg. *U S Bur Stand Bul* 11:457-70 My 10 '15  
 Electrolytic corrosion of iron in soils. B. McCollum and K. H. Logan. *U S Bur Stand Tech Pa* 26:1-69 '13; Abstract. *J Fr Inst* 180:228-32 Ag '15  
 Electrolytic iron; abstracts. L. Guillet. *Met & Chem Eng* 12:787 D '14; *Eng M* 49:928-9 S '15; *J Fr Inst* 180:461-2 O '15  
 Influence of different elements on the corrosion of iron. L. C. Wilson. *Eng M* 50:78-86 O '15  
 Interference measurements of wave lengths in the iron spectrum (2851-3701). K. Burns and W. F. Meggers. *U S Bur Stand Bul* 12:179-205 N 8 '15; Abstract. *J Fr Inst* 180:375-6 S '15  
 Iron in tomatoes. C. A. Brautlecht and G. Crawford. *J Ind & Eng Chem* 6:1001-2 D '14  
 Magnetic and other properties of electrolytic iron melted in vacuo. T. D. Yensen. *pl Am Inst El E Pro* 34:237-61 F '15; Abstract. *Sci Am S* 79:247 Ap '15  
 Magnetic behaviour of iron under alternating magnetization of sinusoidal wave-form. N. W. McLachlan. *diags Inst El E J* 53:809-19 Je 15 '15  
 Magnetic studies of mechanical deformation in certain ferromagnetic metals and alloys. H. Hanemann and P. D. Merica. *il Am Inst Min E Bul* 108:2371-85 D '15  
 Metallic iron in coke samples. J. R. Campbell. *Colliery* 35:538-41 My '15  
 99.84-per-cent-pure iron for electrical purposes. *il Elec W* 66:213-14 J1 24 '15  
 Passivity of metals. H. G. Byers and S. C. Langdon. *diags Am Chem Soc J* 36:2004-11 O '14  
 Permanganate determination of iron in the presence of fluorides—the analysis of silicates and carbonates for their ferrous iron content. O. L. Barnebey. *Am Chem Soc J* 37:1481-96 Je '15  
 Protective coatings for iron and steel. E. P. Later. *Foundry* 42:497-8; 43:35+ D '14-Ja '15  
 Rust removal by chemical reagents. J. N. Friend and C. W. Marshall. *Iron Tr R* 56:1023-4 My 20 '15  
 Symposium on iron and steel. *Met & Chem Eng* 13:655-7 O 1 '15  
 Why iron and steel corrode. J. Aston. *Iron Tr R* 56:423-8 F 25 '15  
*See also* Blast furnaces; Cast iron; Chilled iron; Corrosion and anti-corrosives; Corrugated iron; Foundry practice; Galvanizing; Iron alloys; Iron founding; Iron industry; Iron metallurgy; Iron mines and mining; Iron ores; Metallography; Pig iron; Slag; Steel; Wrought iron

## Iron—Continued

## Analysis

- Analoid method for the determination of manganese in steel, iron ore and slag. *Met & Chem Eng* 12:793-4 D '14
- Analoid method for the determination of phosphorus in steel, iron and slag. *Met & Chem Eng* 13:191-2 Mr '15
- Determination of boron in iron. J. M. Lindgren. *Am Chem Soc J* 37:1137-9 My '15
- Method for determining gases in steel. P. Goerens and J. Paguet. *diag Iron Age* 95:1060-1 My 13 '15

## Testing

- Iron-cobalt alloy,  $Fe_3Co$ , and its magnetic properties. T. D. Yensen. *II Gen Elec R* 18:881-7 S '15

## Iron, Corrugated. See Corrugated iron

## Iron alloys

- Effect of boron upon the magnetic and other properties of electrolytic iron melted in vacuo. T. D. Yensen. *II III U Eng Exp Sta Bul* 77:1-19 '15
- Iron-cobalt alloy,  $Fe_3Co$ , and its magnetic properties. T. D. Yensen. *II Gen Elec R* 18:881-7 S '15
- Magnetic properties of some iron alloys melted in vacuo. T. D. Yensen. *II diag Am Inst E E Pro* 34:2455-95 O '15
- Manufacture of ferro-alloys in the electric furnace. R. M. Keeney. *diags U S Bur Mines Bul* 77:102-85 '14; Excerpts. *Iron Tr R* 56:717-22+, 765-7+, 862-7+ Ap 8-15, 29 '15
- Phenomenon of passivity in connection with ferrous alloys of different composition and structure. H. W. Moseley. *Am Chem Soc J* 37:3226-33 O '15

See also Ferrophosphorus; Ferrovanadium; Invar; Spiegeleisen

## Iron and steel electrical engineers, Association of. See Association of iron and steel electrical engineers

## Iron and steel institute

- Annual meeting. *II Engineer* 119:500-2, 527-8 My 21-28 '15
- Autumn conference, Sept. 23-24. *Engineer* 120:313-14, 334-6 O 1-8 '15
- Autumn meeting, London, Sept. 23. *Iron Tr R* 57:798-9 O 21 '15

## Iron and steel institute, American. See American iron and steel institute

## Iron carbides

- Carburisation of iron at low temperatures in blast furnace gases; abstracts, with discussion. T. H. Byrom. *Engineer* 120:335 O 8 '15; *Iron Age* 96:1176-8 N 18 '15
- Constitution of the iron-carbon alloys: a chemical theory to explain the different properties by the existence of ferrated carbides. G. Auchy. *Iron Age* 95:60-1 Ja 7 '15

## Iron-carbon diagram

- Modified iron-carbon diagram. E. A. Sperry. *Met & Chem Eng* 13:469-71 Ag '15

## Iron founding

- Blow holes and sulphur. R. A. Pitman. *Foundry* 43:95-6 Mr '15
- Blow-holes in a casting. W. J. Keep; C. E. Lyall. *Foundry* 43:262, 304-5 Ji-Ag '15
- Casting iron around pipe. E. A. Vaupel. *diag Foundry* 43:241 Je '15
- Castings from blast furnace. *Iron Age* 96:1054 N 4 '15
- Comparison of analysis and shrinkage. W. J. Keep. *Foundry* 43:58-9 F '15
- Continuous malleable cupola practice increasing output of malleable castings. L. E. Gilmore. *Iron Age* 95:306-8 F 4 '15
- Control of chill in cast iron, considering the elements effective in the manufacture of malleable castings and chilled car wheels. G. M. Thrasher. *II Am Inst Min E Bul* 106:2129-38 O '15; Same. *Foundry* 43:491-3+ D '15; Same. *Iron Tr R* 57:1171-3+ D 16 '15; Excerpt (Natural chill of cast iron) *Met & Chem Eng* 13:39-40 Ja '15
- Controlling the sulphur in melting pig iron. W. M. Carr. *Foundry* 43:189-90, 310 My, Ag '15
- Dull iron. W. J. Keep. *Foundry* 43:322 S '15
- Fuel ratio for car wheel iron. A. S. Dowler. *Foundry* 43:97-8 Mr '15

- Fuel ratio on car wheel iron. W. J. Keep. *Foundry* 43:51-2 F '15
- History of a bad furnace cast. W. G. Imhoff. *Iron Tr R* 57:131-2 Ji 15 '15
- Loss in melting. W. J. Keep. *Foundry* 43:272 Ji '15
- Low carbon pig iron for iron castings. *Iron Age* 95:796-7 Ap 8 '15
- Making car wheels at the Lenoir car works. G. S. Evans. *Foundry* 43:351-3, 428-31, 435-9 S-N '15
- Malleable iron castings for the automobile industry. R. Moldenke. *Horseless Age* 35:69-72 Ja 13 '15
- Mixture for chilled crusher rolls. W. J. Keep. *Foundry* 43:187 My '15
- Modern foundry pig-iron mixer; operating and chemical results with blast-furnace and coke-oven gases; abstract. O. Simmersbach. *Iron Age* 96:812-13 O 7 '15
- Modern iron founding. R. Onions. *II diags Engineer* 119:411-18 Ap 23 '15
- Molding air compressors on jolt-rammers. *II Foundry* 43:18-19 Ja '15
- Molding cast-iron tunnel linings. L. J. Josten. *II Iron Age* 95:715-19 Ap 1 '15
- Molten iron boiling in ladles. W. J. Keep. *Foundry* 43:439 N '15
- Old and new methods of making carwheels. C. V. Slocum. *diags Iron Age* 96:676-9 S 23 '15
- Opportunities for the foundry engineer. W. F. Prince. *Foundry* 43:63-4 F '15
- Overcoming slag and dirt in gray iron. P. R. Micks. *Foundry* 43:186-7 My '15
- Phosphorus limit in malleable castings. E. Touceda. *II Iron Tr R* 57:634-6 S 30 '15; Same. *Foundry* 43:446-9 N '15; Same cond. *Iron Age* 96:924-6 O 21 '15
- Pin holes and internal shrinkage. W. J. Keep. *Foundry* 43:19-20 Ja '15
- Pouring systems for gray-iron foundries. *II Iron Age* 96:1123-5 N 11 '15
- Shot in gray iron. W. M. Carr. *Foundry* 43:52 F '15
- Shot in gray iron castings. R. A. Pitman. *Foundry* 43:103 Mr '15
- Slow melting in the cupola. C. Metcalf. *Foundry* 43:106 Mr '15
- Slow melting in the cupola. J. H. Anderson. *Foundry* 43:180-1 My '15
- Standardizing air furnace practice. A. L. Polard. *Foundry* 43:412-13 O '15
- Test on melting shot iron in the cupola: experiment in a stove foundry. G. E. Pickup. *II Foundry* 42:467-8 D '14
- See also Cast iron; Foundry practice; Molding machines

## Iron handling

- Handling iron and cinder at the blast furnace. J. E. Johnson, jr. *II diags Met & Chem Eng* 13:43-50 Ja '15

## Iron industry and trade

- British India. *U S Sp Cons Rep* 72:205-14 '15
- British iron and steel trade in 1914. *Iron Age* 95:144-5 Ja 14 '15
- Charts showing fluctuations in iron and steel prices for twenty years. *Iron Tr R* 56:8a Ja 7 '15
- Chicago iron trade in 1914. O. J. Abell. *Iron Age* 95:2-4 Ja 7 '15
- Cincinnati iron trade in 1914. C. L. Smith. *Iron Age* 95:8-10 Ja 7 '15
- Cincinnati market's gloomy year. S. G. Backman. *Iron Tr R* 56:103+ Ja 7 '15
- European iron and steel in 1914. *Eng & Min J* 99:269-70 F 6 '15
- Few furnaces completed in 1914. R. V. Sawhill. *Iron Tr R* 56:1233-4 D 31 '14
- French steel plants in war time. F. Miltoun. *Iron Age* 95:940-2 Ap 29 '15
- Future of Birmingham district. R. R. Silver. *II Iron Tr R* 56:135-6 Ja 14 '15
- Germany's steel output for August. *Iron Age* 96:832 O 14 '15
- Independents are conspicuous: developments of the past year on Minnesota iron ranges. H. C. Estep. *II Iron Tr R* 56:72-81 Ja 7 '15
- Iron a factor in the world's progress. J. Birkinbine. *J Fr Inst* 179:471-85 Ar '15; Same cond. *Iron Tr R* 56:1059-62 My 27 '15; Excerpts. *Sci Am S* 80:326 N 20 '15
- Iron and steel market at Pittsburgh in 1914. C. F. Williams. *Iron Tr R* 56:40-4 Ja 7 '15

**Iron industry and trade—Continued**

- Iron and steel prices for seventeen years. Iron Age 95:16-17 Ja 7 '15
- Iron and steel statistics. F: Hobart. Eng & Min J 99:70-1 Ja 9 '15
- Iron industry in Brazil. E. C. Harder. II maps Am Inst Min E Bul 94:2573-80 O '14; Same cond. Iron Tr R 55:718-20 O '14; Same cond. Metal Work 84:148-5+ J1 30 '15; Abstract. Iron Age 94:888-9 O '14; Discussion. Am Inst Min E Bul 100:813-16 Ap '15
- Iron industry in Europe. Eng & Min J 99:833 My 8 '15
- Iron ore supplies for seaboard furnaces. E. C. Eckel. II map Iron Age 95:69-73 Ja 7 '15
- Iron, steel and coal in Dixie. H. S. Chamberlain. Iron Tr R 58:176-8+ Ja 21 '15
- Lake iron ore prices. Eng & Min J 99:790-1 My 1 '15
- Lake Superior iron conditions. Eng & Min J 100:443-4 S 11 '15
- Lake Superior iron ore. Eng & Min J 99:24 Ja 2 '15
- Lake Superior iron ranges; the 1914 season. Eng & Min J 99:73-6 Ja 9 '15
- Last year's iron ore prices prevail. Iron Tr R 56:804-6 Ap 22 '15
- Light ore movement to the east. C. J. Stark. II map Iron Tr R 56:137-42 Ja 14 '15
- Location of the iron industry. R. Olds. Eng & Min J 99:502-3 Mr 13 '15
- M. A. Hanna & co. sell Hill ore. Iron Tr R 55:1027 D 3 '14
- Minette iron ores of the Lorraine district. H. H. Campbell. Iron Age 96:168-9 J1 15 '15
- Money and iron: fact, comment. Iron Tr R 56:212-13, 294-5 Ja 28-F 4 '15
- More steel-works iron. Iron Age 95:314 F 4 '15
- Much more merchant ore from lake mines. D. E. Woodbridge. Iron Age 95:148-9 Ja 14 '15
- Neglecting the export market for southern iron. P. G. Donald. Am Ind 15:21 My '15
- Pacific coast iron situation; the iron ores of California and possibilities of smelting. C. C. Jones. map Am Inst Min E Bul 105:1887-98 S '15; Discussion. 108:2498-501 D '15
- Philadelphia iron trade in 1914. C. Lundberg. Iron Age 95:7-8 Ja 7 '15
- Pittsburgh iron and steel markets. B. E. V. Luty. map Eng & Min J 99:72-3 Ja 9 '15
- Pittsburgh iron trade in 1914. R. A. Walker. Iron Age 95:5-6 Ja 7 '15
- Production of wrought pipe, cast pipe and galvanized sheets in 1913. Iron Age 94:1514 D 31 '14
- Selling price of castings. A. O. Backert. Iron Tr R 56:228-30+ Ja 28 '15
- Some aspects of the iron and steel industry in Europe. U S Sp Cons Rep 71:1-48 '15
- Survey of events in England: effects of the great war on iron and steel. J. Horton. Iron Tr R 56:64-6, 82 Ja 7 '15
- Tendencies in the location of the iron industry. Eng & Min J 99:508-8 Mr 13 '15
- Wages and hours of labor in the iron and steel industry. table Mach 21:954 Ag '15
- War and the export trade. C. J. Stark. Iron Tr R 56:31-2, 90-4 Ja 7 '15
- Year of disappointment in East. C. J. Stark. Iron Tr R 56:38-9, 87-9 Ja 7 '15
- Year of low prices at Chicago. G. H. Manlove. Iron Tr R 56:36-7 Ja 7 '15
- Year of retrogression in the iron trade. Iron Age 95:1-2 Ja 7 '15

See also Foundry practice; Iron mines and mining; Pig iron; Rolling mills; Scrap metal; Steel industry; Stoves; United States steel corporation

**Iron metallurgy**

- Bosh fuel domes. F: L. Grammer. diag Eng Soc W Pa 31:809-20 O '15
- Chemical principles of the blast furnace. J. E. Johnson, Jr. Met & Chem Eng 13:536-43, 634-8 S 1-15 '15
- Concentrating plant of the Moose Mountain. Ltd. B. B. Hood. II diag Eng & Min J 99:973-8 Je 5 '15
- Concentration by the Goltra process: beneficiation of brown iron ores by means of a current of hot air and properly located screens. W: B. Phillips. Iron Age 94:1148-50 N 12 '14; Abstract. Eng M 48:582-5 Ja '15
- Contributions of the chemist to the iron and steel industry. A. S. Cushman. J Ind & Eng Chem 7:934-5 N '15

- Crude oil as a reducing agent. Iron Tr R 56:525-6 Mr 11 '15
- Desulphurization in cupola practice. Iron Age 95:488-9 Ag 28 '15
- Electric pig iron in Norway; a new type of furnace using coke successfully—cost data. diag Iron Age 95:1120 My 20 '15
- Electro-thermic iron-ore smelting in Scandinavia. Eng & Min J 100:351-2 Ag 28 '15
- Evolution of the malleable process. J. P. Pero and J. C. Nulsen. Iron Age 96:1168-70 N 18 '15
- Handling iron and cinder at the blast furnace. J. E. Johnson, Jr. II diag Met & Chem Eng 13:43-50, 85-9 Ja-F '15
- High blast heats in Mesaba practice. W. Mathesius. Am Inst Min E Bul 99:539-55 Mr '15; Same cond. Iron Age 95:475-8 F 25 '15; Same cond. Iron Tr R 56:365-6, 368 F 18 '15; Discussion. Am Inst Min E Bul 101:1100-7 My '15
- Iron manufacture by electrolysis. L. Guillet. II Iron Age 94:1390-2 D 17 '14; Same. Sci Am S 79:70-1 Ja 30 '15
- Leaching experiments on the Ajo ores. S. Croasdale. Am Inst Min E Bul 92:1919-24 Ag '14; Excerpt (Manufacture of sponge iron as a precipitant for copper). Eng & Min J 99:326-8 F 13 '15
- Magnetic-concentration mill at Mt. Hope, N. J. S: Shapira. II diag Eng & Min J 99:559-65 Mr 27 '15
- Manufacture and use of pure iron. H. See. II Assn Eng Soc J 54:133-41 Ap '15
- Oxy-acetylene welding practice; metallurgy of iron and its relation to welding. S. W. Miller. II Mach 22:315 N '15
- Possible applications of oxygen in metallurgy. J. E. Johnson, Jr. Met & Chem Eng 13:483-4 Ag '15
- Progress in blast furnace practice. A. E. Maccoun. Iron Tr R 56:1129-31, 1167-9, 1255-64 Je 3-17 '15
- Progress in blast furnace practice. A. N. Diehl. Iron Tr R 57:28-9, 31 J1 '15
- Progress in the smelting of Mayari ore. R: V. McKay. Iron Age 93:1386-9+ Je 4 '14; Same. Iron Tr R 55:1215-21 D 31 '14
- Recovery of fine-dust iron. R. Baggaley. Iron Age 95:1109 My 20 '15
- Removal of metalloids in the pig-washing process. E: L. Ford. Am Inst Min E Bul 108:2394-7 D '15
- Rotary kilns for desulphurization and agglomeration. S: E. Doak. Am Inst Min E Bul 105:2061-6 S '15; Same. Iron Age 96:574-6 S 9 '15
- Slags from titaniferous ores. F. E. Bachman. diag Iron Tr R 55:1040-2 D 3 '14
- Technical progress in iron and steel in 1914. J. E. Johnson, Jr. Iron Age 95:19-23 Ja 7 '15
- Thermal principles of the blast furnace. J. E. Johnson, Jr. Met & Chem Eng 13:718-20, 737-82, 833-40, 905-10, 954-62 O 15-D 15 '15
- Titaniferous ores in the blast furnace. F. E. Bachman. Iron Age 94:1470-1; Discussion. A. H. Lee; R. H. Lee. 94:1471-3 D 24 '14
- Vanadium in German ores. L. Blum. Iron Age 95:847 Ap 15 '15
- Washed metal. H: D. Hibbard. II plan Am Inst Min E Bul 108:2387-94 D '15

See also Blast furnaces; Case hardening; Cast iron; Corrosion and anti-corrosives; Foundry practice; Galvanizing; Iron alloys; Iron mines and mining; Metallography; Pig iron; Slag; Steel metallurgy; Wrought iron

**Iron mines and mining**

See also Iron ores

**Chile**

- Operations at the Tofo iron mines in 1914. map Iron Age 94:1448-9 D 24 '14
- Tofo iron mines in 1914. C. A. Buck. map Eng & Min J 99:145-6 Ja 16 '15

**China**

- Iron-mining situation in north China. Eng & Min J 99:786 My 1 '15

**Lake Superior region**

- Lake Superior iron ranges; the 1914 season. Eng & Min J 99:73-6 Ja 9 '15
- Little activity on old ranges. Iron Tr R 56:232-3 Ja 28 '15

## Iron mines and mining—Continued

## Michigan

- Electrical plant of the Wakefield iron co. H. I. Pearl and J. Green. *Il plan Eng & Min J* 100:349-51 Ag 23 '15
- Finding the Judson orebody. L. E. Ives. *Il map Eng & Min J* 99:443-5 Mr 6 '15
- Investments in Iron river district. C. A. Tupper. *Il Iron Tr R* 56:759-64 Ap 15 '15
- Marquette range sixty years ago. R. Kelly. *Eng & Min J* 99:201 Ja 23 '15
- Mining methods on Gogebic range. O. M. Olson, O. M. Schaus and F. Blackwell. *diags Iron Tr R* 57:735-7 O 14 '15
- Observations on the appraisal of the iron mines of Michigan. C. H. Baxter. *Eng & Min J* 99:489-40 Mr 6 '15
- Open pit mining on Gogebic range. W. C. Hart. *Iron Tr R* 57:523-5 S 16 '15

## Minnesota

- Exploration work on Cuyuna range. P. W. Donovan. *Iron Tr R* 57:534-5 S 16 '15
- Good results in south range on the Cuyuna. *Iron Tr R* 57:363-4 Ag 19 '15
- Independents are conspicuous: developments of the past year on Minnesota iron ranges. H. C. Estep. *Il Iron Tr R* 56:72-81 Ja 7 '15
- Lake Superior mining institute 20th annual meeting. *Il Iron Tr R* 57:542-5 S 16 '15
- Manganiferous iron ores of the Cuyuna range. E. P. McCarty. *Eng & Min J* 100:400-2 S 4 '15
- Orebody of the Mesabi range. J. F. Wolff. *Il map Eng & Min J* 100:89-94, 135-9, 178-85, 219-24 J 17-Ag 7 '15
- Structure of the Cuyuna iron-ore district of Minnesota. C. A. Cheney, jr. *map Eng & Min J* 99:1113-15 Je 26 '15

## New Jersey

- Develop nation's oldest iron mine: Empire steel & iron co.'s Mount Hope properties. H. M. Roche and J. C. Stoddard. *Il plans Iron Tr R* 57:171-6+ J 1 22 '15

## New York (state)

- Improvements at Port Henry iron mines. *diags Iron Age* 95:1390-2 Je 24 '15

## Russia

- Russia—its future as a coal and iron producer. C. R. King. *map Eng M* 48:481-92 Ja '15

## Iron ores

- Additional data on origin of lateritic iron ores of eastern Cuba. C. K. Leith and W. J. Mead. *Am Inst Min E Bul* 103:1977-80 J 1 '15
- Ancient sedimentary iron ores of British India. C. M. Weld. *maps Econ Geol* 10:435-52 J 1 '15
- Decline in production of iron ore. *Metal Work* 82:880 Mr 12 '15
- Drying iron ore on the Mesabi range. E. J. Collins. *Eng & Min J* 99:696-7 Ap 17 '15
- Exploring for Adirondack ores. C. S. Clark. *Il map Iron Tr R* 56:617-19 Mr 25 '15
- Formation and distribution of bog iron-ore deposits. C. L. Dake. *Am Inst Min E Bul* 103:1429-36 J 1 '15; *Excerpts. Eng & Min J* 100:74-5 J 10 '15; *Excerpts. Iron Tr R* 57:486 S 9 '15; *Discussion. Am Inst Min E Bul* 103:2475-6 D '15
- Formation and distribution of residual iron ores. C. L. Dake. *Am Inst Min E Bul* 101:937-46 My '15
- Geology of the iron-ore deposits in and near Daiquiri, Cuba. J. F. Kemp. *Il diags map Am Inst Min E Bul* 105:1801-36 S '15; *Discussion. 108:2478 D '15*
- Iron deposits of Daiquiri, Cuba. W. Lindgren and C. P. Ross. *bibliog Il Am Inst Min E Bul* 106:2171-90 O '15
- Iron industry in Brazil. E. C. Harder. *Il maps Am Inst Min E Bul* 94:2573-86 O '14; *Same cond. Iron Tr R* 55:718-20+ J 15 '14; *Same cond. Metal Work* 84:143-5+ O 30 '15; *Abstract. Iron Age* 94:888-9 O 15 '14; *Discussion. Am Inst Min E Bul* 100:813-16 Ap '15
- Iron ore supplies for seaboard furnaces. E. C. Eckel. *Il map Iron Age* 95:69-78 Ja 7 '15
- Manganiferous iron ores of the Cuyuna range. E. P. McCarty. *Eng & Min J* 100:400-2 S 4 '15
- Mayari iron-ore deposits, Cuba. J. F. Kemp. *Il Am Inst Min E Bul* 98:129-54; 103:1461-3 F, J 1 '15

- Minette iron ores of the Lorraine district. H. H. Campbell. *Iron Age* 96:168-9 J 15 '15
- New method of making sieve tests. R. H. Bassett. *Iron Tr R* 57:230+ J 1 22 '15
- Ore reserves in United States. J. Birkinbine. *Iron Tr R* 55:1046+ D 8 '14
- Orebody of the Mesabi range. J. F. Wolff. *Il map Eng & Min J* 100:89-94, 135-9, 178-85, 219-24 J 17-Ag 7 '15
- Oriskany iron ores of Virginia. C. M. Weld. *maps Econ Geol* 10:399-421 J 1 '15
- Pacific coast iron situation; the iron ores of California and possibilities of smelting. C. C. Jones. *map Am Inst Min E Bul* 105:1897-98 S '15
- Problems in iron ore geology in Sweden and in America. P. Geijer. *Il Econ Geol* 10:299-329 Je '15
- Progress in blast furnace practice. A. N. Diehl. *Iron Tr R* 57:28-9, 31 J 1 '15
- Structure of the Cuyuna iron-ore district of Minnesota. C. A. Cheney, jr. *map Eng & Min J* 99:1113-15 Je 26 '15
- Titanium and titaniferous ores. P. H. Berggreen. *Sibley J* 29:227-30 Ap '15
- See also* Iron mines and mining; Pyrite

## Iron oxide

- Emissivity of metals and oxides; iron oxide. G. K. Burgess and P. D. Foote. *U S Bur Stand Bul* 12:83-9 O 28 '15

## Iron works

- Cockerill iron works. *Il Sci Am S* 78:339-90 D 19 '14
- Furnace improvements at plant of Jackson Iron & steel co., Jackson, O. *Il diags Iron Tr R* 56:724-7 Ap 8 '15
- Gas and steam engines and the turbine. J. E. Johnson, jr. *Iron Age* 95:826-9 Mr 18 '15; *Same. Sci Am S* 79:294-5 My 8 '15
- Modern plant for rolling iron: St. Louis screw co. H. C. Estep. *Il diags plans Iron Tr R* 57:82-9+ J 1 8 '15
- New iron and steel works construction. *Iron Age* 95:30-2 Ja 7 '15
- New iron mill equipped to assure low costs, with diagram of layout. O. J. Abell. *Il Iron Age* 96:71-7 J 1 8 '15
- New Taylor-Wharton plant with diagram of layout. *Il Iron Tr R* 57:794-7+ O 21 '15
- Six etchings of European iron and steel works. J. Pennell. *Iron Tr R* 56:57-64 Ja 7 '15
- Washington iron works, including foundry, machine, boiler and forge shops. F. A. Churchill, jr. *Il Iron Tr R* 55:1043-5+ D 3 '14
- See also* Forge shops; Foundries

Irons, Electric. *See* Electric irons

## Ironwork

- Iron manufacture by electrolysis. L. Guillet. *Il Iron Age* 94:1390-2 D 17 '14; *Same. Sci Am S* 79:70-1 Ja 30 '15
- Removing iron scale by pickling; theory vs. practice. C. Earing. *Met & Chem Eng* 13:785-6 N 1 '15

*See also* Blacksmithing; Forging; Tin plate; Welding; Wrought iron

## Ironwork, Architectural

- Ironwork from Rome and Tuscany. J. S. Scarff. *Il diags Brickb* 24:63-6 Mr '15
- See also* Sheet metal work, Architectural

## Irrigation

- Allowing for irrigable lands not irrigated. P. A. Cooper. *Eng N* 78:405-6 F 25 '15
- Does irrigation pay? F. H. Newell. *Eng Rec* 72:384-5 S 25 '15
- Electricity for irrigation pumping. *Il Elec R & W Elec'n* 66:1022-3 Je 5 '15
- Electricity in agriculture. C. J. Rohrer. *Il Gen Elec R* 18:486-8 Je '15; *Same. Sci Am S* 80:265 O 23 '15
- Improved intake for irrigation water from a silt laden stream. A. L. Harris. *diag Eng & Contr* 42:184-5 Ag 19 '14
- Irrigation with fresh water from the sea. H. J. Moynihan. *Sci Am S* 79:84-5 F 6 '15
- Measuring devices for irrigation water tested at the Davis Field laboratory, University of California. *diags Eng & Contr* 43:248-53 Mr 17 '15
- Method and cost of constructing reinforced concrete drops, Canadian Pacific Ry., irrigation projects. R. S. Stockton. *Il Eng & Contr* 43:345-6 Ap 14 '15

**Irrigation—Continued**

Outline of data to be obtained for a report on the feasibility of any irrigation project. H. F. Robinson. Eng N 72:1815 D 31 '14  
 Outlook for irrigation construction. F. H. Newell. Eng & Contr 44:151-2 Ag 25 '15  
 Resolutions of the International Irrigation congress. Eng N 72:1161-2 D 10 '14  
 Structural details and construction costs of a small irrigation system. O. M. Goss. diags Eng & Contr 43:347 Ap 14 '15  
 Utilizing existing irrigation works to secure useful data. Eng Rec 71:674-5 My 29 '15  
 Why drainage of irrigated lands is necessary, and how the problem is handled. D. W. Murphy. Il Eng Rec 72:36-8 Jl 10 '15; Abstract. Eng M 50:464-5 D '15  
*See also* Dams; Drainage; Irrigation canals; Reclamation of land; Reservoirs; Silt

**Cost**

Cost of electric pumping for irrigation. Elec W 66:58-71 Jl 10 '15; Excerpts. Eng Rec 72:257-8 Ag 28 '15  
 Cost of pumping for irrigation. G. E. P. Smith. Eng & Contr 44:148-50 Ag 25 '15  
 First cost and cost of operation of irrigation pumping plants. H. D. Hanford. Eng & Contr 43:491-2 Je 2 '15

**Alberta**

America's greatest irrigation project; Basano dam, southern Alberta. Z. E. Black. Il Sci Am 113:252-3 S 18 '15

**California**

Concrete headgate, south San Joaquin and Oakdale irrigation district in California. F. C. Scobey. diag Eng & Contr 43:883 Ap 28 '15  
 Construction methods and costs Sacramento valley irrigation project. P. A. Welty. maps Eng & Contr 43:554-8 Je 23 '15  
 Dominguez central-station irrigation system. C. E. Loomis. plan map Eng N 74:540-1 S 16 '15  
 Irrigating the land of little rain. S. M. Kennedy. Il diags Elec W 65:1471-4 Je 5 '15  
 Plan for municipal irrigation from the Los Angeles aqueduct. B. A. Heinly. map Eng N 73:344-6 F 13 '15  
 Use of water in the Modesto irrigation district. K. A. Heron. Eng N 74:1000-1 N 18 '15

**Idaho**

Cost of electric pumping for irrigation. Il map Elec W 66:68-71 Jl 10 '15; Excerpts. Eng Rec 72:257-8 Ag 28 '15  
 Federal project at Minidoka, Idaho. A. P. Connor. Il plans map Power 41:422-5 Mr 30 '15  
 Increase in operating costs due to pumping. Minidoka irrigation project. Eng & Contr 43:348 Ap 14 '15  
 Water power and its relation to irrigation in southern Idaho. J. C. Beebe. Il Assn Eng Soc J 54:63-78 F '15

**India**

British India. diags U S Sp Cons Rep 72:354-69 '15  
 Irrigation works of India. H. J. Shepstone. Il Sci Am S 80:164-5 S 11 '15

**Italy**

Italy and engineering. Sci Am S 80:11 Jl 3 '15

**Montana**

Valler-Montana irrigation project. K. A. Heron. Il map plans Eng N 73:241-6 F 11 '15

**Nebraska**

Abandoned irrigation canals and the lesson they teach. Eng & Contr 43:330 Ap 14 '15  
 Unused irrigation canals. F. H. Newell. Eng N 73:832 Ap 1 '15

**Nevada**

Lahontan dam, Truckee-Carson irrigation project, Nevada. D. W. Cole. Il diags map Eng N 73:758-62 Ap 22 '15

**New South Wales**

Murrumbidgee irrigation project. Il map Engineer 120:321-4 O 1 '15

**Pacific coast**

Irrigation pumping in the coast states. Il map Elec W 65:1399-1408 My 29 '15

**Russia**

Two large irrigation projects in Russia. M. Nikolitch. Il map Eng N 74:8-11, 102-4 Jl 1, 15 '15; Abstract. Eng M 50:457-9 D '15

**Sudan**

Irrigation in the Sudan. Engineer 120:379-80 O 22 '15

**Texas**

Irrigation by pumping at Del Rio, Texas. A. Potter. Il diags plan Eng & Contr 43:66-71 Ja 27 '15; Same abr. Eng Rec 71:596-8 My 8 '15

**Turkey**

Irrigation works in Mesopotamia. Engineer 120:339 O 8 '15

**United States**

Changed reclamation service again. Eng Rec 72:671-2 N 27 '15  
 Colorado river can supply Imperial valley's needs. Eng Rec 71:788 Je 19 '15  
 Features of engineering in the West. H. F. Stratton. Sibley J 29:223-5 Ap '15  
 Progress in irrigation, 1914. F. H. Newell. Eng Rec 71:13-14 Ja 2 '15  
 Reservoir sites on the Colorado river. L. C. Hill. map Eng Rec 70:870-1 D 19 '14  
 Shall the irrigation settlers be given relief? Eng Rec 72:650-1 N 27 '15

**Utah**

Provo reservoir company's irrigation project. C. S. Jarvis. Il Eng N 74:394-5 Ag 26 '15

**Washington**

Irrigation in the Wenatchee valley. A. Gunn. Il Elec W 65:1560-3 Je 12 '15

**Irrigation canals**

Automatic check gate structure for Turlock irrigation district, California. diags Eng & Contr 43:412 My 5 '15  
 Bowl outlets reduce velocities at pipeline ends. Il diag Eng Rec 72:41 Jl 10 '15  
 Building concrete drops on irrigation canals in western Canada. R. S. Stockton. Il Concrete Cem 6:236-8 My '15  
 Concrete chute drops water 130 feet from canal to reservoir. D. W. Cole. Il diags Eng Rec 71:456-7 Ap 10 '15  
 Concrete lining as applied to irrigation canals. S: Fortier. 17 pls U S Agric Bul 126:1-86 '14; Excerpt (Design and structural details). Eng & Contr 43:71-4 Ja 27 '15; Excerpt (Methods and costs of constructing). Eng & Contr 43:130-8 F 10 '15  
 Concrete lining for irrigation canals at Burbank, Wash.; abstracts. E. M. Chandler. Eng N 73:772-3 Ap 22 '15; Eng & Contr 43:489-90 Je 2 '15  
 Costs of keeping down vegetation on irrigation canal banks by grazing. Eng & Contr 43:347 Ap 14 '15  
 Earth fill replaces trestle for irrigation canal. Il diags Eng Rec 71:525-6 Ap 24 '15  
 Enlarging an irrigation canal of the Modesto irrigation district, California. K. A. Heron. Il diags Eng N 74:486-7 S 9 '15  
 Gate structures for irrigation canals. Eng & Contr 42:185-6 Ag 19 '14  
 How to express seepage losses from irrigation canals. S: Fortier. Eng N 73:1128-9 Je 10 '15  
 Irrigation weir, measuring rod and discharge card. K. A. Heron. Il diag Eng N 74:257 Ag 5 '15  
 Losses in concrete and mortar lined canals. H. D. Newell. Eng Rec 72:21 Jl 3 '15; Same abr. Eng & Contr 44:22 Jl 7 '15  
 Methods and costs of lining irrigation canal with Toncan metal. Eng & Contr 43:411-12 My 5 '15  
 Plaster lining irrigation canals and laterals, Okanogan project, U. S. reclamation service. C. Casteel. Eng & Contr 43:441-3 My 19 '15  
 Prehistoric irrigation canal in New Mexico. S. M. Johnson. Il Eng N 73:561 Mr 25 '15

**Irrigation canals—Continued**

- Recommendations for values of  $n$  for different kinds of irrigation channels. F. C. Scobery. Eng & Contr 44:67-60 J1 21 '15  
Suggested design of proportional division box for irrigation water. diag Eng & Contr 43: 347-8 Ap 14 '15  
Tour of West discloses best practice in irrigation and power canal design. C. A. Farwell. Eng Rec 71:623-4 My 15 '15  
Transmission losses in Modesto, Cal., irrigation canals. K. A. Heron. Eng N 74:583 S 23 '15  
Transmission losses in unlined irrigation channels. S. Fortier. Eng N 73:1060-3 Je 3 '15  
*See also* Flumes

**Isherwood, Benjamin Franklin, 1822-1915**

- Sketch. por Power 41:903 Je 29 '15; Eng N 74: 44-5 J1 1 '15

**Isobutane**

- Vapor pressures of acetylene, ammonia and isobutane at temperatures below their normal boiling points. G. A. Burrell and I. W. Robertson. Am Chem Soc J 37:2482-6 N '15

**Isolated plants. See Electric plants****Isomerism**

- Isomeric octacetates of lactose. C. S. Hudson and J. M. Johnson. Am Chem Soc J 37:1270-5 My '15

- On 1-phenyl-4, 5-dihydro-5-oxy-3-triazolylsulfonic acid and 1-phenyl-4, 5-dihydro-5-oxy-3-triazolylmethylsulfone. E. W. Esslinger and S. F. Acree. Am Chem Soc J 37:183-9 Ja '15

- Researches on hydantoins: geometrical isomerism in the hydantoin series. T. B. Johnson and S. E. Hadley. Am Chem Soc J 37:171-7 Ja '15

**Isoprene**

- Isoprene from  $\beta$ -pinene. A. W. Schorger and R. Sayre. diag J Ind & Eng Chem 7:924-6 N '15

**Isotasy**

- Isotasy and mountain building. L. de Marchi. Sci Am S 80:198-9 S 25 '15

**Itakolumite**

- Itakolumite, a flexible stone. Sci Am 112:812 Ap 3 '15

**Italy**

- Italy and engineering. Sci Am S 80:11 J1 3 '15

**Army**

- Italy on a war footing. II Sci Am 112:610-11 Je 19 '15

**Earthquake, 1915**

- Real cause of the Italian disaster. Sci Am 112: 94 Ja 30 '15

**Military aeronautics**

- Italian military aeroplanes. J: J. Ide. diags Sci Am S 79:801 My 8 '15

**Navy**

- Italian navy. II Sci Am 112:592-3 Je 12 '15  
Renewing of Italy's navy. Sci Am 112:468 My 22 '15

**Social conditions**

- Housing reform in Italy. C. Aronovici. Am Inst Arch J 3:89-93 F '15

**Ivory, Vegetable. See Vegetable ivory****J****Jackhamers**

- Mounted jackhamers. II Colliery 35:452 Mr '15

**Jacks**

- Adjustable jack for emergency service. II Iron Age 95:1289 Je 10 '15

- Hydraulic jack for pinion removal. J. G. Koppel. diags Elec Ry J 45:1039 My 29 '15

- Jacking out sheestpiles with a friction clamp. diag Eng N 73:1181 Je 17 '15

- Large sand jacks work well in lowering 1100-ton span. II Eng Rec 72:304 S 4 '15

- Lifting jack with wide range of action. diags Eng & Contr 43:525 Je 9 '15

- Simplex pole jack. II Elec R & W Elec'n 67: 683 O 9 '15; Elec W 66:827 O 9 '15

- Use and care of lifting jacks. Eng & Contr 43:499-500 Je 2 '15

**Jackson, William B.**

- President of the Western society of engineers. por Eng & Contr 43:46 Ja 20 '15

**Jacksonville, Florida****Water supply**

- Water works improvements at Jacksonville. II Eng & Contr 44:178 S 8 '15

**Wharves**

- Jacksonville municipal docks nearing completion. Eng N 74:1099 D 2 '15

- Novel bulkheads for wharves at Jacksonville. H. D. Mendenhall. diags map Eng N 74:772-4 O 21 '15

**Jails. See Prisons****Jamaica, Long Island**

- Architectural design as an aid to real estate promotion: principles of group planning applied to small suburban houses. G. H. Irving. II plans Brickb 23:295-6, pl 191-2 D '14

**Jamesonite**

- La Sirena, a wonderful deposit of Jamesonite. R. W. Raymond. Eng & Min J 99:9-10 Ja 2 '15

**Jamestown, New York****Parks**

- Jamestown's hundred acre lot. S. W. Allen. II Am For 21:567-70 Ap '15

- Jamestown, Westfield & Northwestern railroad Electrification. II map Elec Ry J 45:1110-11 Je 12 '15

**Japan****Commerce**

- Is Japan's trade worth while? P. N. Beringer. Am Ind 15:21-2 Mr '15

- Japanese markets for American lumber. F. H. Smith. U S Bur For & Dom Com 94:1-16 '15

**Industries and resources**

- Forests of Japan. N. B. Eckbo. II Am For 21: 693-711 Je '15

- Hojo coal mine. S. Meguro. II map Colliery 35:575-80, 637-49 Je-J1 '15

- Hydroelectric power from snowlad Fujiyama. C. Tsukamoto. II diag map Elec W 66:910-13 O 23 '15

- 115,000-volt hydroelectric system in Japan. II diags plan Elec W 65:1599-1606, 1671-8 Je 19-26 '15

**Japanese**

- Two false notions concerning the Japanese. R. W. Raymond. Eng & Min J 99:871-2 My 15 '15

**Japanning**

- Crawford sectional ovens in the Ford shops. II Eng M 48:sup2-3 Mr '15

- Electrically heated japanning ovens. C. F. Hirschfeld and W. D. Dygert. II Elec W 66: 930-2 O 23 '15

- Japanning, its origin and development. M. Rosenberg. II Metal Ind n s 13:58-60 F '15; Same. Metal Work 83:292-3 F 19 '15

- Modern acid-dipping, electroplating and japanning plant. H. N. Trumbull. II Gen Elec R 18:1121-6 D '15

- Radio process japs a car in 3 days. II Automobile 32:278-9+ F 11 '15

- Sales arguments for electrically heated japanning ovens. D. Rollins. Elec W 65:43-4 Ja 2 '15

**Jefferson, Thomas, 1743-1826**

- Thomas Jefferson and the first monument of the classical revival in America. F. Kimball. II Am Inst Arch J 3:370-81, 421-34, 473-81 S-N '15

**Jellutong rubber resin. See Gums and resins****Jersey City****Railroads**

- Industrial development railway for Jersey City. map Elec Ry J 45:663 Ap 2 '15

- Reconstruction of the Jersey City terminal yards. II plan Ry Age 58:787-91 Ap 9 '15

**Jersey City—Railroads—Continued**

Track layout and signals of the Jersey City passenger terminal of the Central R. R. of New Jersey. diags plan Ry R 56:647-50 My 15 '15

**Jets**

Liquid jets. C. T. Du Rell. Met & Chem Eng 13:714-16 O 15 '15

**Jetties**

Works for the improvement of navigable estuaries; abstract. L. Luiggi. Eng Rec 72: 637-8 N 20 '15

See also Breakwaters

**Jewelry**

Dead jewelry stock. O. K. Hillman. Metal Ind n 13:8 Ja '15

Model jewelry factory; the Traub manufacturing company, Detroit, Mich. C. M. Hoke. II Metal Ind n 13:385-8 S '15; Discussion. 13: 435-6 O '15

South American market for jewelry and silverware. U S Sp Cons Rep 70:1-23 '15

Treasure of Lahun; beautiful jewelry ornaments and tools found in a plundered pyramid. W. M. F. Petrie. II Sci Am S 79:264-5 Ap 24 '15

See also Precious stones

**Jiggers. See Chiggers****Jigs**

Armature bearing jig. W. E. Nees. II Elec Ry J 46:324 Ag 21 '15

Jig and fixture design. diags Mach 21:580-1 Mr '15

Jig and fixture mechanisms. G. M. Meyncke. diags Mach 21:970-4 Ag '15

Jigs and jig making. M. R. Lawrence. II Engineer 118:688-90 D 18 '14

Providing for up-keep in designing jigs and fixtures. A. A. Dowd. diags Mach 22:12-15 S '15

Special jigs for locomotive repair shops. II diags Ry Age (Mech ed) 89:409-12 Ag '15

Standard jig fastening. C. C. Anthony. diags Mach 22:31 S '15

Two useful drill jigs. II Mach 21:278 D '14

**Jigs (ore treatment)**

Neill jiggng apparatus. diag Eng & Min J 100: 313 Ag 21 '15

**Jitney buses**

Ammunition in the jitney war. Elec Ry J 45: 634 Mr 27 '15

Cost of bus operation. II Elec Ry J 45:414-17 F 27 '15

Dangers of the jitney. S. M. Williams. Elec Ry J 46:364 Ag 28 '15

Developments in California and Washington. Elec Ry J 45:266-8 Ja 30 '15

Developments in Los Angeles, in Texas cities, in San Francisco and in Portland. Elec Ry J 45:204 Ja 28 '15

Developments in the jitney bus field. Automobile 32:650-1, 693-4 Ap 8-15 '15

Economics of the jitney bus movement. F. W. Doolittle. Elec Ry J 46:220-4 Ag 7 '15

Economics of the jitney problem from a traction company's viewpoint. C. N. Black. Elec Ry J 46:510-11 S 18 '15

Effect of publicity on the jitney movement in Portland. F. W. Hild. Elec Ry J 46:560-1 S 18 '15

Human element determines success or failure of jitney movement. Automobile 32:666-7 Ap 15 '15

Information summarized from fourteen cities. Elec Ry J 45:648-50 Mr 27 '15

Jitney and the small car. H. S. Cooper. Elec Ry J 46:64-5 Jl 10 '15

Jitney bus competition. J. E. Hewes. Elec Ry J 46:18-19 Jl 8 '15

Jitney bus; cost of operation, etc.; abstracts. C. I. Palm. Elec Ry J 45:795-6 Ap 24 '15; Eng N 73:934-5 My 13 '15

Jitney bus, impossibility of an ultimate economic success. Eng M 49:116-18 Ap '15

Jitney bus in Los Angeles. E. L. Lewis. Elec Ry J 45:757-8 Ap 17 '15

Jitney bus invasion. Eng Rec 71:221 F 20 '15

Jitney bus invasion. J. H. Longfellow. Ry R 56:224-5 F 13 '15

Jitney bus on the wane in Memphis, Tenn. Elec Ry J 46:395 S 4 '15

Jitney bus strong in many Ohio cities. Horseless Age 35:272 F 24 '15

Jitney bus vs. the trolley car. Eng N 73:946-7 My 13 '15

Jitney buses. Ry R 56:155-6 Ja 30 '15

Jitney buses appear in western Canada.

Horseless Age 35:342 Mr 10 '15

Jitney convention, Kansas City, May 4-6. Elec Ry J 45:980 My 15 '15

Jitney down East. Elec Ry J 45:861-2 My 1 '15

Jitney figures from two southern cities. Elec Ry J 45:1021-3 My 29 '15

Jitney from the community standpoint. Ry R 56:666-7 My 15 '15

Jitney—its wane and possible influence on urban transportation. Eng Rec 71:513 Ap 24 '15

Jitney movement reaches eastern cities. Automobile 32:434-5 Mr 4 '15

Jitney operation in Dallas, Tex.; number of cars in operation and average earnings per car. Elec Ry J 46:884 My 8 '15

Jitney problem. J. C. Thirlwall. Sci Am S 80: 148-4, 154-5 Ag 28-S 4 '15; Same. Gen Elec R 18:604-14 Jl '15

Jitney problem in Philadelphia. Elec Ry J 45: 1224-5 Je 28 '15

Jitney seen as a picturesque industry defying laws of investment and production. Elec Ry J 46:261-2 Ag 7 '15

Jitney situation. J. H. Wilson. Elec Ry J 45: 421-2 F 27 '15

Jitney statistics at Fort Worth. Elec Ry J 46:54 Jl 10 '15

Jitney vs. light cars. Elec Ry J 45:1206-9 Je 28 '15

Jitney vs. the trolley. F. D. Everett. Elec Ry J 46:151 Jl 24 '15

Jitneys at San Antonio. Elec Ry J 45:1197 Je 28 '15

Jitneys carry 45,000 daily in Kansas City. Automobile 32:346 F 18 '15

National jitney convention to be held in Kansas City in May. Elec Ry J 45:650 Mr 27 '15

New jitney buses: Studebaker, Koehler and Kissel special vehicles of this type. II Automobile 32:562 Mr 25 '15

Portland company on jitney bus. Elec Ry J 45:396-7 F 20 '15

Railway and jitney nickels; their distribution. Elec Ry J 45:1024 My 29 '15

Report on motor vehicles. Elec Ry J 45:619-24 Mr 27 '15

Rise and decline of the jitney in its birthplace. E. L. Lewis. II Elec Ry J 46:500-2 S 18 '15

South Bend collects jitney data. Elec Ry J 46:399 S 4 '15

Studebaker jitney bus. II Horseless Age 35:410 Mr 24 '15

Thirty-nine cities have been invaded. Elec Ry J 45:809-10 F 6 '15

**Regulation**

Application of established legal principles to the jitney. W. E. Dunn. Elec Ry J 46:503-5 S 18 '15

Buffalo, Portland, El Paso and Tucson have passed ordinances. Elec Ry J 45:774-6 Ap 17 '15

California supreme court upholds San Francisco ordinance ruling—Georgia commission's plan for regulation. Elec Ry J 46:125 Jl 17 '15

Cities and legislatures striving for adequate regulatory measures. Elec Ry J 45:580-2 Mr 13 '15

City and state legislative progress. Elec Ry J 45:908-10 My 8 '15

Commission rulings. Elec Ry J 45:1092-3 Je 5 '15

Developments in the jitney bus field. Automobile 32:739 Ap 22 '15

Digest of jitney ordinances. C. L. King. Elec Ry J 46:314-17 Ag 21 '15

Effective jitney ordinance. Elec Ry J 45:397-8 F 20 '15

Efforts toward regulatory legislation—labor's attitude in Rock Island and Providence. Elec Ry J 45:602-4 Mr 20 '15

First jitney case before New York public service commission. Elec Ry J 46:929-30 O 30 '15

Further action before the public service commission of New York—the Philadelphia injunction suits. Elec Ry J 46:650 S 25 '15

Hearing on bus regulations in Los Angeles—San Diego company outlines its position. Elec Ry J 45:156 Ja 16 '15

**Jitney buses—Regulation—Continued**

- Houston and Salt Lake City regulatory ordinances passed—San Francisco ordinance introduced. Elec Ry J 45:733-4 Ap 10 '15
- Jitney a public utility. Automobile 32:1053 Je 10 '15
- Jitney as state and city issues. Elec Ry J 46:1057-8 N 20 '15
- Jitney common carrier in Wisconsin. Automobile 33:399 Ag 26 '15
- Jitney conditions in St. Louis—the Fort Worth ordinance sustained—jitney ordinances in Augusta, Birmingham and Providence. Elec Ry J 45:1005-6 My 22 '15
- Jitney jottings. Elec Ry J 46:690, 845, 970 O 2, 16, N 6 '15
- Jitney omnibus legislation; analysis of regulations in eleven cities. A. L. Bostwick. Munic J 38:591-2 Ap 29 '15
- Jitney ordinances recently passed. Elec Ry J 46:207 JI 31 '15
- Jitneys regulated. Automobile 32:963-4 My 27 '15
- Letter from New York commission to mayors and district attorneys on jitney status. Elec Ry J 46:781-2 O 9 '15
- Los Angeles jitneys declining. Elec Ry J 46:206 JI 31 '15
- Massachusetts bill to regulate jitney bus. Elec Ry J 46:268 Ja 30 '15
- New problem in traffic regulation. F. Reed. Il Munic Eng 48:160-7 Mr '15
- New York and California commissions have jitney regulatory problems before them. Elec Ry J 46:292-3 Ag 14 '15
- New York state bill signed—jitney made a commission issue in Illinois. Elec Ry J 46:1048 My 29 '15
- Ordinance in Newark before mayor; Progress of regulation in other cities. Elec Ry J 46:467-8 S 11 '15
- Ordinances passed in St. Louis and Loganport. Elec Ry J 46:1098 N 27 '15
- Progress of legislation—state and city measures pending. Elec Ry J 45:691-2 Ap 3 '15
- Proposed jitney regulation in Rhode Island. Horseless Age 35:409 Mr 24 '15
- Public service commission and court action in New York on jitney. Elec Ry J 46:377-8 Ag 28 '15
- Public service commission of Maryland prescribes rules for jitney operation. Elec Ry J 45:1226 Je 26 '15
- Public service commission of the District of Columbia decides buses are common carriers. Elec Ry J 46:421-2 S 4 '15
- Railroad commission of California has no jurisdiction over motor bus—first jitney application passed upon by New York commission. Elec Ry J 46:888 O 23 '15
- Regulation for the jitney bus. Elec Ry J 45:374-7 F 20 '15
- Regulation of jitney busses in St. Louis. Munic Eng 48:341-2 Je '15
- Regulatory measures. Elec Ry J 46:82-3 JI 10 '15
- Regulatory ordinances. Elec Ry J 45:1133-5; 46:39-40 Je 12, JI 3 '15
- San Francisco, Atlanta, Fargo, Gadsden, Spokane and Little Rock pass regulatory measures—state bills—the jitney convention. Elec Ry J 45:317-18 Ap 24 '15
- San Francisco jitney men and city authorities in complete accord. Automobile 32:873-4 My 13 '15
- Summary of recent significant developments covering various phases of the problem. Elec Ry J 45:957-8 My 15 '15
- Terms of new Springfield and Portland regulatory ordinances; Georgia jitney ruling. Elec Ry J 45:1182-3 Je 19 '15
- Travels with the jitney. Elec Ry J 46:166-7 JI 24 '15
- Trend of recent legislation. Elec Ry J 45:484-6 Mr 6 '15
- Wisconsin jitney law. Elec Ry J 46:378 Ag 28 '15
- Jobbers**  
Winning the co-operation of the jobber. Metal Work 33:38 Ja 1 '15
- Jobwork.** See Typesetting—Jobwork
- Johns Hopkins university**  
Gilman hall and Mechanical and electrical engineering building; views and plans. Brickb 24:pl 186-48 O '15
- New home of Johns Hopkins university. J. M. Hammond. Il Arch Rec 37:481-92 Je '15
- New Johns Hopkins buildings dedicated. Power 41:761-2 Je 1 '15
- Joint committee on classification of technical literature**  
Organization. Munic J 38:783-4 Je 3 '15; Same cond. Eng Rec 71:696 My 29 '15; Same cond. Elec V 65:1434 My 29 '15
- Joints**  
Behavior of riveted joints under stresses: abstracts. J. E. Howard. Int Marine Eng 20:18-19 Ja '15; Power 41:216 F 9 '15
- Cooper universal joint. Il Mach 22:67-8 S '15
- Diagonal joints. T. Grimes; R. D. Irvington. Power 41:485-6 Ap 6 '15
- Flexible leather shaft couplings replace metallic type. diags Automobile 32:272-3 F 11 '15
- Friction losses in the universal joint: abstracts. P. F. Walker and W. J. Malcolmson. Iron Age 94:1488-9 D 24 '14; Am Soc M E J 37:17-20 Ja '15; Automobile 32:378-9 F 25 '15
- Methods of jointing aluminum. Il Mach 21:470-3 F '15
- Two types of joint between walls and bottom of a reservoir. diags Eng N 73:591 Mr 25 '15
- Universal joint efficiency. C. W. Spicer. Horseless Age 35:74 Ja 13 '15
- See also Boilers—Joints; Couplings; Pipe joints; Rail joints
- Journalism**  
Science in the daily press. R. A. Gregory. Illum Engr 8:203-7 My '15
- See also Newspapers; Publicity
- Journals (machinery).** See Bearings
- Juggling.** See Conjuring
- Juniper**  
Cypress and juniper trees on the Rocky mountain region. G. E. Sudworth. 26 pls 11 maps U S Agric Bul 207:1-36 '15
- Junkers engines**  
Junkers oil engine. F. E. Junge. diags Eng M 48:689-93 F '15
- Jupiter (collier)**  
Performance of the electrically propelled collier Jupiter. S. M. Robinson. Eng N 73:893 F 25 '15
- Jute**  
Finishing jute twine. diag Textile World 48:431-2 Ja '15

**K****Kalamazoo, Michigan****Lighting**

- Kalamazoo municipal plant. T. Wilson. Il plans Power 41:218-24 F 18 '15
- Kalamazoo situation. W. Newbigging. Am Gas Light J 103:38-9 JI 19 '15

**Kaleidoscope**

- Photo-kaleidograph. Il Sci Am 112:103 Ja 30 '15
- Photokaleidograph: an apparatus for the production of kaleidoscopic pictures. Il Sci Am S 79:12-13 Ja 2 '15

**Kambara earth**

- Kambara earth and its bleaching action on oils. S. Ueno. diags J Ind & Eng Chem 7:596-600 JI '15

**Kansas****Sanitary affairs**

- State control of water-supply and sewerage in Kansas. Eng N 73:209 F 4 '15

**Kansas City, Kansas****Bridges**

- Design features of the East Kansas avenue bridge over the Kansas river at Kansas City. diags Eng & Contr 43:496-9 Je 2 '15

**Public works**

- Municipal water and light plant of Kansas City. P. W. Morgan. Il Munic Eng 48:284-5 My '15



**Kansas City, Missouri****Bridges**

- Construction of the Twelfth street trafficway viaduct. E. E. Howard. diag. plan Eng & Contr 44:328-32 O 27 '15  
 Half-mile concrete viaduct provides double-deck trafficway in Kansas City. H. E. Fox. 11 diag. Eng Rec 71:164-6 F 6 '15  
 Methods and equipment used in erecting girder spans of Pennsylvania avenue viaduct, Kansas City, W. F. Wynne. 11 plan Eng & Contr 43:539-40 Je 16 '15  
 New double-deck bridge over the Missouri river at Kansas City. diag. map Ry Age 59:284 Ag 13 '15  
 Twelfth street double-deck viaduct at Kansas City. 11 diag. Eng N 73:10-15 Ja 7 '15

**Railroads**

- Kansas City terminal power plant. 11 Elec W 65:1468-70 Je 5 '15  
 Union passenger station. 11 Arch & Bldg 47:226-9+ Je '15  
 Viaduct construction on the Kansas City terminal. A. R. Eltzen. 11 diag Ry Age 58:397-400 Mr 5 '15  
**Kansas City railway & light company**  
 Kansas City supplemental plan. Elec Ry J 46:1064-5 N 20 '15  
**Kansas City Southern railway**  
 Financial statistics. map Ry Age 59:724 O 22 '15  
 Kansas gas, water, electric light & street railway association  
 18th annual convention, Topeka, Oct. 21. Elec R & W Elec'n 67:809 O 30 '15

**Kaolin**

- Kaolin in the treatment of bacteria carriers. Sci Am S 80:151 S 4 '15  
 Origin of kaolin. W. Lindgren. Econ Geol 10:89-98 Ja '15  
 White-burning clays of the southern Appalachian states. J. H. Watkins. 11 map Am Inst Min E Bul 98:391-411 F '15; Abstract. Met & Chem Eng 13:179-80 Mr '15

**Katathermometers**

- Measure of comfort in factories. J. A. Seager. 11 Heat & Ven 12:24-7 S '15

**Kathode rays. See Cathode rays****Kavala**

- Kavala, the debatable land. Sci Am S 80:312-13 N 13 '15

**Keefer, Thomas C.**

- Late Thomas C. Keefer and the plans for the Victoria bridge at Montreal. Eng N 73:179-80 Ja 28 '15

**Kelp**

- Business aspect of the kelp proposition. F. P. Dewey. Sci Am S 79:71 Ja 30 '15  
 Destructive distillation of Pacific coast kelps. D. R. Hoagland. J Ind & Eng Chem 7:673-4 Ag '15  
 Pacific kelp beds. Sci Am 112:457 My 15 '15  
 Scottish kelp industry. Met & Chem Eng 13:443 Jl '15

**Kelvin, William Thomson, 1st baron, 1824-1907**

- Lord Kelvin's work on gyrostatics; with discussion. A. Gray. 11 Inst E E J 53:277-307 F 15 '15

**Kenotron**

- New device for rectifying high tension alternating currents. S. Dushman. diag. Gen Elec R 18:156-67 Mr '15; Abstract. Elec W 65:559-60 Mr 13 '15  
 Pure electron discharge and its applications in radio telegraphy and telephony. I. Langmuir. diag. Gen Elec R 18:332-4 My '15

**Kensico dam**

- Architecture of Kensico dam. A. D. Flinn. 11 diag Eng N 74:433-6 S 2 '15  
 Electrically operated contractor's plant for building Kensico dam. A. W. Carroll. 11 Eng Rec 71:18-20 Ja 2 '15  
 Kensico dam construction in 1914. W. F. Smith. 11 plan Eng N 73:966-8 My 20 '15  
 Thermophones in Kensico dam. W. F. Smith. diag. Eng N 72:1173 D 10 '14  
 Yardage record at Kensico dam due, in part, to operation of mixers. G. T. Seabury. Eng Rec 71:199 F 13 '15

**Kentucky****Industries and resources**

- Advantages of the western Kentucky field. F. V. Ruckman. Colliery 35:498-9 Ap '15  
 Oil and gas possibilities of Kentucky. F. J. Fohs. map Am Inst Min E Bul 99:621-8 Mr '15

**Kentucky mining institute**

- Winter meeting in Louisville, Dec. 4-5, 1914. Colliery 35:328-30 Ja '15

**Keokuk, Iowa**

- Mitering lock gate at Keokuk presents novel features. B. H. Parsons. 11 diag. Eng Rec 73:344-9 S 18 '15  
 Submersible lock gate at Keokuk operated by compressed air. B. H. Parsons. 11 diag. Eng Rec 72:446-50 O 9 '15

**Bridges**

- Reconstruction of Mississippi river bridge at Keokuk. diag. Eng N 74:260-2 Ag 5 '15

**Kerosene**

- Extinguishing fire with kerosene. Sci Am S 80:115 Ag 21 '15  
 Preparation of gasoline and kerosene from heavier hydrocarbons. B. T. Brooks and others. diag. J Ind & Eng Chem 7:180-5 Mr '15

**Kerosene engines. See Gas and oil engines****Kerosene lamps. See Lamps****Ketchup**

- Determination of formic acid in ketchup. C. A. Peters and L. P. Howard. J Ind & Eng Chem 7:35-7 Ja '15

**Ketones**

- Addition compounds of aldehydes and ketones with organic acids. J. Kendall and W. A. Gibbons. Am Chem Soc J 37:149-62 Ja '15  
 Method for the separation and identification of certain homologous  $\alpha$ -diketones. J. M. Jolin. Am Chem Soc J 37:892-6 Ap '15

**Keyseating machines**

- Burr portable shaft keyseater. 11 Mach 21:505-6 F '15; Iron Age 95:185 Ja 21 '15

**Khaki**

- Dyeing of military khaki. Textile World 48:424-5 Ja '15

**Klaohchow**

- Problem in war names. Sci Am 111:486 D 12 '14

**Kiel**

- Kiel; its naval and engineering features. A. W. Metcalfe. diag. Engineer 120:50-2 Jl 16 '15; Same cond. Sci Am S 80:234 O 9 '15

**Kilauea**

- Diary of Kilauea. 11 Sci Am S 79:36 Ja 16 '15  
 Notes from a volcano laboratory; personal documents in the case of Kilauea and Mauna Loa. T. A. Jaggar, jr. 11 Sci Am S 80:214-17 O 2 '15

**Kilns**

- Flue dust sintering plant at Gary, Ind. 11 plan Iron Age 95:1168-70 My 27 '15  
 Kilns for lime burning. Sci Am S 80:7 Jl 3 '15  
 Norfolk & Western humidity-controlled dry kiln for lumber. W. H. Lewis. 11 plans Ry Age (Mech ed) 89:462-4 S '15; Same. Ry Age 59:431-3 S 3 '15  
 Rotary kilns for desulphurization and agglomeration. S. E. Doak. Am Inst Min E Bul 105:2061-6 S '15; Same. Iron Age 96:574-6 S 9 '15; Same. Iron Tr R 57:1178-9+ D 16 '15; Same cond. Eng & Min J 100:601-3 O 9 '15  
 Rotary sintering kilns at Gary. H. C. Estep. 11 diag Iron Tr R 56:1020-2 My 20 '15

**Kilowatt**

- Relation of the horse-power to the kilowatt. Sci Am S 79:162-3 Mr 13 '15

**Kindergartens**

- Downers Grove kindergarten, Downers Grove, Ill.; views. Brickb 24:pl 103-5 Jl '15  
 Modern schoolhouse; the kindergarten. 11 plans Brickb 24:8 Ja '15

**Kinematics. See Force and energy****Kinetic theory of gases. See Gases, Kinetic theory of****Kitchen cars**

- All-steel kitchen car, North-Eastern railway. 11 plan (supp.) Engineer 119:490, 492 My 14 '15

**Kitchen cars—Continued**  
British all-steel kitchen cars. 11 diags Ry Age (Mech ed) 89:178-82 Ap '15

#### Kitchens

Doing it electrically at West Point. J. A. Randolph. 1 Elec W 66:574-5 S 11 '15  
Gas kitchen equipment of the Biltmore hotel. G. F. Herington. 11 plan Am Gas Light J 102:170-2 Mr '15  
Illinois chapter discusses kitchen ventilation. Metal Work 83:171 Ja 22 '15  
Kitchen ventilation for a modern hotel; equipment of the Biltmore. New York. 11 diags plan Heat & Ven 12:18-18 Ja '15  
Large electric kitchen; abstract. K. Perlewitz. diag Elec W 64:1115-16 D 5 '14  
See also Kitchen cars

#### Kjeldahl flask

Modified kjeldahl flask for determining soil nitrogen. H. A. Noyes. 11 Am Chem Soc J 36:2541-2 D '14

#### Klamath mountains, California

Pocket deposits of the Klamath mountains, California. H. G. Ferguson. 11 maps Econ Geol 10:241-61 Ap '15

#### Knit goods

Blas knitted fabric. diag Textile World 48:444 Ja '15  
Bleaching knit goods. Textile World 48:409 Ja '15  
Calculating the cost of knit goods. Textile World 50:218-24 N '15  
Canadian knit-goods market and how it is supplied. B. S. Bates. Textile World 49:sup 271-2 My '15  
Causes of cloudy work in worsted knit goods. 11 Textile World 49:871-3 S '15  
Defects in knit goods. Textile World 48:519-21 F '15  
Fancy knit goods for ladies' goods. 11 Textile World 48:233-5, 343-4 N-D '14  
Finishing knit underwear. Textile World 49:449-50; 50:103-4 J1 O '15  
Flat and balbriggan knit goods. Textile World 49:546-7 Ag '15  
Fleece-lined fabric. diag Textile World 48:423 Ja '15  
Fleeced lined knit goods. Textile World 48:616-17 Mr '15  
Improved knit fabric. 11 Textile World 49:540-1 Ag '15  
Mill wrinkles in knit goods. Textile World 48:323-6 D '14  
New flat seaming machine for knitted goods. 11 Textile World 48:513-15 F '15  
Novel knitted fabric. diags Textile World 48:609-10 Mr '15  
Stripes in knit goods. 11 Textile World 50:106-7 O '15  
Twisted-net fabric. 11 Textile World 49:645-7 S '15

See also Hosiery

#### Knitting

Fancy knitting. 11 Textile World 48:611-13 Mr '15  
Kinks in knitting. diags Textile World 49:109-11 Ap '15  
Knitting silk plated coats. Textile World 49:361 Je '15

#### Knitting machinery

Circular knitting machine. diags Textile World 48:420-1, 614-15 Ja, Mr '15  
Hand-knitting machine. diags Textile World 48:351-3 D '14  
Improved circular knitting machine. diags Textile World 49:454-6 J1 '15  
Improved pearl stitch knitting machine. 11 Textile World 49:891-2 S '15  
Knitting machine needle. diags Textile World 48:513-19; 49:105-7 F, Ap '15  
Latch opening mechanism for knitting machines. diags Textile World 49:452-3 J1 '15  
Needle carrier for knitting machines. diags Textile World 48:416-17 Ja '15  
Philadelphia knitting machinery exhibition. 11 Textile World 49:245-270b My '15  
Speed of knitting machines on neckwear. Textile World 49:453-4 J1 '15  
Tuttle knitting machine. 11 Textile World 48:342 D '14

#### Knitting mills

Design and construction of the Gantner-Mattem co. knitting mill at San Francisco. E. F. Cykler. 11 diags Concrete Cem 6:273-7 Je '15

#### Knives

See also Cutlery

#### Knots and splices

Manila rope fastenings. 11 Eng Rec 70:706 D 26 '14  
Tests of splices in galvanized iron wire. T. Croft. 11 Elec R & W Elec'n 67:716-17 O 16 '15

#### Kongo, Belgian

Economic geology of the Belgian Congo, Central Africa. S. H. Ball and M. K. Shaler. 11 map Econ Geol 9:606-63 O '14; Excerpts. Eng & Min J 99:441, 608-11 Mr 6, Ap 3 '15  
Katanga increasing its output. R. Williams. Eng & Min J 100:308 Ag 21 '15

#### Koppat

New waterproof resistance material. 11 Elec R & W Elec'n 66:402 F 27 '15

#### Kubisagari

Drop head, a new ailment. L. K. Hirschberg. Sci Am 112:67 Ja 16 '15

#### Kynuna wells

Kynuna wells—a test case of rock pressure. J. W. Gregory. map Econ Geol 9:768-75 D '14

## L

#### Labels

Outgrowths of letterpress. G. Sherman. 11 Inland Ptr 54:777-80; 55:42-7 Mr-Apr '15

Package labels. Inland Ptr 56:208a-208h N '15

#### Labor and capital

New certificate of character for manufacturers. R. G. Valentine. Ind Eng 15:40-3 F '15

Scientific management and the labor problem. R. T. Kent. Ind Eng 14:418-21 N '14

See also Arbitration, Industrial; Boycott; Employees; Employers' associations; Industrial betterment; Labor and laboring classes; Profit sharing; Strikes; Trade unions; Wages; Welfare work in industry

#### Labor and laboring classes

Art through the emancipation of the workman. R. A. Cram. Am Inst Arch J 3:242-3 Je '15

Daniel Guggenheim's testimony to United States industrial relations commission. Eng & Min J 99:245-7 Ja 30 '15

Influence on architecture of the condition of the worker. by T. S. Atlee. Review by F. L. Ackerman. Am Inst Arch J 2:547-55 D '14

Labor problems in scientific management. Iron Age 94:1369-72 D 10 '14

See also Apprentices; Arbitration, Industrial; Bonus system; Convict labor; Efficiency, Industrial; Employees; Government employees; Hours of labor; Housing problem; Industrial betterment; Industrial education; Labor and capital; Labor exchanges; Labor laws; Miners; Open and closed shop; Profit sharing; Railroads—Employees; Scientific management; Strikes; Trade unions; Unemployed; Wages; Welfare work in industry; Workmen's compensation

#### Labor camps. See Construction camps

#### Labor exchanges

Country-wide employment bureau under federal direction. Eng & Contr 43:437 My 19 '15  
Department of labor to find workmen for manufacturers. Iron Age 95:223 Ja 21 '15  
Proposed National labor bureau. Iron Age 95:253-4 Ja 28 '15

#### Labor laws

Allen labor law declared unconstitutional. Eng Rec 71:61 Ja 9 '15

See also Factory laws; Foundry laws; Hours of labor; Minimum wage; Mining laws; Picketing; Workmen's compensation

#### Laboratories

Description of the new building of the Mellon institute. W. A. Hamor. 11 plans J Ind & Eng Chem 7:333-43 Ap '15

**Laboratories—Continued**

Laboratory's the thing for the United States army and navy. *Sci Am* 113:90 J1 31 '15  
 New laboratory plans of the Massachusetts institute of technology. plans *Eng N* 74:340-1 Ag 19 '15

Pennsylvania railroad test department. C. D. Young. II plan *Ry Age* (Mech ed) 89:333-7 J1 '15; Same. *Ry Age* 89:6-11 J1 2 '15; Same. *Ry R* 57:2-5, 42-6, 117-18 J1 3-10, 24 '15; Excerpts. *Metal Ind n s* 13:288-9 J1 '15

See also Moving picture laboratories; Waterworks—Laboratories

Laboratories, Electric. See Electric laboratories  
 Laboratories, Engineering. See Engineering laboratories

Laboratories, Mining. See Mining laboratories

Laboratories, Municipal. See Municipal laboratories

Laboratories, Physical. See Physical laboratories

Laboratories, Physiological. See Physiological laboratories

**Lac insect**

Curious insect that is the source of lac varnishes. II *Sci Am S* 80:281-3 O 30 '15

**Lace**

Finishing of knit underwear. II *Textile World* 49:541-4 Ag '15

Improved lace fabric. II *Textile World* 48:315-16 D '14

**Lace curtains**

Finishing Nottingham lace curtains. *Textile World* 49:552-3 Ag '15

**Lackawanna steel company**

Report for 1914. *Iron Tr R* 56:528-9 Mr 11 '15

**Lacolle Junction, Quebec****Bridges**

Design, construction and detailed costs of the Richelieu river bridge. II *diags Eng & Contr* 42:542-6, 585-9 D 9, 23 '14

**Lacquer**

See also Japanning

**Lactic acid**

Better bread by means of natural lactic acid. A. Wahl *J Ind & Eng Chem* 7:773-5 S '15

**Lactones**

Esters, as well as the monomolecular  $\beta$ - and  $\gamma$ -lactones, of *d*-mannonic and *d*-gluconic acids; on ortho-bis-*d*-galactonic acid, *d*-galactonic  $\gamma$ -lactone and its mono-hydrate. O. F. Hedenburg. *Am Chem Soc J* 37:345-72 F '15

**Lactose octacetate**

Isomeric octacetates of lactose. C. S. Hudson and J. M. Johnson. *Am Chem Soc J* 37:1270-5 My '15

**Ladders**

Capital mine steel ladders. H. S. Wiard. *diag Eng & Min J* 99:944-5 My 29 '15

Safeguarding of ladders, stairs and platforms. II *diags Am Ind* 15:sup1-4 F '15

Wood vs. steel mine ladders. G. E. Collins. *diag Eng & Min J* 100:186 J1 31 '15

**Lagan**

Logging Rasak and Lagan. T. R. Helms. II *Am For* 21:1050-3 N '15

**Lake Erie & Eastern railroad**

Engineering features involved in building the Lake Erie & Eastern R. R. through the city of Youngstown. II plan map *Ry R* 57:132-7 J1 31 '15

**Lake Erie and Ohio river canal**

Proposed Lake Erie and Ohio river canal; with discussion. G. F. Stickney. map *Eng Soc W Pa* 31:285-33 My '15

**Lake Shore & Michigan Southern railway**

Annual report for 1914. *Ry Age* 58:724-6 Mr 26 '15

New York Central and the Lake Shore: revenue for 1914. *Ry Age* 58:683-5 Mr 26 '15

**Lake Superior mining institute**

20th annual meeting. *Eng & Min J* 100:446-7 S 11 '15

20th annual meeting. *Iron Tr R* 57:542-5 S 16 '15

20th annual meeting, Sept. 6-9. *Iron Age* 96: 636-7 S 16 '15

**Lakeland, Florida****Politics and government**

Commission government and an engineer manager for Lakeland. H. D. Mendenhall. *Munic Eng* 48:249-51 Ap '15

Year of commission-manager government at Lakeland, Fla. D. F. McLeod. *Eng N* 72:1118 D 3 '14

**Lakeside press**

Training the apprentice. H. Hillman. II *Inland* Ptr 55:820-2 S '15

**Lambert**

Units of brightness. J. R. Cravath. *Elec W* 66:60-1 J1 10 '15

**Lamme, Benjamin G.**

Sketch. por *Eng M* 50:207 N '15

**Lamp posts**

How concrete lamp-posts are made for Lincoln park, Chicago. G. T. Donoghue. II *diag Eng N* 74:989 N 18 '15

Shock-absorbing cast iron lamp post. II *diags Ry Age* 58:464 Mr 12 '15

See also Street lighting fixtures

**Lamps**

Explosion of kerosene lamps. *Sci Am S* 79:92 F 6 '15

Grading and marking of lamps. *Illum Engr* 8: 149-51, 162 Ap '15

Making lamps for Christmas presents. W. Neubecker. II *diags Metal Work* 82:770-1 D 11 '14

Measurements for the household. *diags U S Bur Stand Circ* 55:68-81 '15

Tools for making lamp wick-tubes and burner caps. R. Toeplitz. II *diags Mach* 21:1002-3 Ag '15

See also Electric lamps; Gas lamps; Headlights; Reflectors; Safety lamps; Searchlights

**Lampyridae**

Experiments on the nature of the photogenic processes in the lampyridae. F. A. McDermott. *Am Chem Soc J* 37:401-4 F '15

**Land**

When is land used for common carrier purposes? *Eng Rec* 71:424 Ap 3 '15

See also Clearing of land; Coal lands; Mineral lands; Railroad land; Real estate; Reclamation of land; Surveying

**Land clearing. See Clearing of land****Land grants**

State and public grants. J. W. Thompson. *U S Bur Mines Bul* 94:pt 2, 1239-1307 '15

**Land laws**

United States mining statutes annotated; settlers' relief acts. J. W. Thompson. *U S Bur Mines Bul* 94:pt 2, 1215-34 '15

**Landlord and tenant**

Damage to stock from lenky rented building. H. J. Buckley. *Metal Work* 83:399 Mr 12 '15

**Landscape gardening**

Principles of landscape forestry. W. Miller. II *Am For* 21:969-76 O '15

Recent aspects of garden design. H. D. Eberlein. II *Arch Rec* 37:300-19 Ap '15

**Landslides**

Extensive earth slippage shuts down cement plant. II plan *Eng N* 74:330-2 Ag 12 '15

Landslide on the Kanawha & Michigan Ry. II *Eng N* 73:747 Ap 15 '15

Sinking land wrecks cement company's power plant. II *Eng Rec* 72:179-80 Ag 7 '15

Stopping a landslide at Mount Vernon. N. H. Darton. II *Eng N* 73:369-70 F 26 '15

Water-soaked bed of blue clay caused landslide at cement plant near Hudson. N. Y. D. H. Newland. map *Eng Rec* 72:253-4 Ag 28 '15

See also Earthwork—Slides; Panama canal—Slides

**Langmuir, Irving**

William H. Nichols medal award. por *J Ind & Eng Chem* 7:348-9 Ap '15

Language. See English language; Phonetics; Punctuation

## Langwies, Switzerland

## Bridges

Design and construction of the Langwies viaduct—Chur-Arosa R. R. A. M. Wolfe. *Il diags Concrete Cem* 6:239-45 My '15

Lanterns, Electric. See Electric lanterns

Lap windings. See Armatures

Lapping. See Grinding and polishing

## Larch

Manufacture of ethyl alcohol from wood waste; western larch as a raw material. F. W. Kressmann. *J Ind & Eng Chem* 7:922-3 N '15

## Lard

Cooking fats in South America. *U S Sp Cons Rep* 87:1-15 '15

## Lassen Peak

Mt. Lassen eruption. R: H. Boerker. *Il Am For* 21:51-5 Ja '15

Volcanic activity of Mt. Lassen. T: H. Means. *Il Eng N* 78:1210-11 Je 24 '15

## Lathes

Converting an engine lathe into a semi-automatic machine. *Il diags Mach* 21:534-5 Mr '15

Double spindle polishing lathes. *Il Metal Ind n* 13:432 O '15

Driving wheel lathe. *Il Ry Age (Mech ed)* 89:371-2 Jl '15

Engine lathe for heavy reduction work. *Il Iron Tr R* 57:268-9 Ag 5 '15

Engine lathe for machining projectiles. *Il Iron Tr R* 57:5 Jl 1 '15

Fairbanks-Morse manufacturing lathe. *Il Mach* 21:1028-4 Ag '15

14-in. heavy automatic shrapnel lathe. *Il Iron Age* 95:454 F 25 '15

Gear gear for lathes. S. K. Eastwood. *diag Iron Age* 95:948 Ap 29 '15

Hardinge precision lathe with quick change of swing. *Il Mach* 21:328-4 D '14

Heavy single operation shell lathe. *Il Iron Age* 96:82 Jl 5 '15

High-speed turret lathe. *Il diags plate (supp) Engineer* 120:184-5 Ag 20 '15

Lathe for plain turning. *Il Iron Tr R* 57:264 Ag 5 '15

Mammoth driving wheel lathe. *Il Sci Am S* 80:129 Ag 28 '15

Motor-driven gun boring lathe. *Il Iron Age* 94:1486 D 31 '14

Niles-Bement-Pond projectile lathes. *Il Mach* 21:926-8 Jl '15

100-in. driving wheel lathe. *Il Iron Age* 95:1004-5 My 6 '15

Redesigned 24-in. turret lathe. *Il Iron Age* 96:809 Ag 5 '15

Shell-case turning lathe with pneumatically-operated clutch. *Il Sci Am* 113:472 N 27 '15

Shell turning and manufacturing lathe. *Il Iron Age* 96:299 Ag 5 '15

Shell work engine lathes. *Il Iron Age* 95:1394-5 Je 24 '15

Single-purpose chucking turret lathe brought out by the Cleveland crane & engineering company, Wickliffe, Ohio. *Il Iron Age* 96:872 O 14 '15

Single-purpose lathe for shell work. *Il Iron Age* 96:810-11 O 7 '15

Special attachments for engine lathes. *Il Iron Tr R* 57:30-1 Jl 1 '15

32-in. lathe for large shell work. *Il Iron Age* 96:84 Jl 8 '15

Three lathes designed for shell work. *Il Iron Tr R* 57:896-7 N 4 '15

Turret indexing mechanisms. A. A. Dowd. *Il diags Mach* 21:797-801 Je '15

Types of automobile crankshaft lathes. J. C. Spence. *Mach* 21:569 Mr '15

Types of automobile crankshaft lathes: universal machines for the crankshaft manufacturer and special equipments for the automobile builder. W: O. Strauss. *Il diags Mach* 21:400-3 Ja '15

Universal hollow-hexagon turret lathe. *Il Iron Age* 95:237 Ja 28 '15; *Ry Age (Mech ed)* 89:96 F '15

Warner & Swasey turret lathes. *Il Mach* 21:511-13 F '15

See also Machine shop practice; Machine tools

## Latin America

## Commerce

Existing obstacles to the extension of our trade with Central and South America. M. Coster. *Elec W* 66:1158-9 My 8 '15

Export trade and how to get it. G. F. Bagge-Féron. *Elec R & W Elec'n* 66:161-4 Ja 23 '15

Monroe doctrine and Latin-American commerce. L. G. Valentine. *Am Ind* 15:18-19-4p '15

See also South America—Commerce

## Latin language

How we got our alphabet. W. Rice. *Inland Ptr* 54:823-4 Mr '15

## Launching

Launching calculations. G. H. Barber. *diags Int Marine Eng* 19:546-50 D '14

Launching data for a battleship: abstract. J: G. Tawressey. *Int Marine Eng* 20:9-11 Ja '15

Launching of the battleship Arizona. G. H. Barber. *Il diags Int Marine Eng* 20:334-6 Ag '15

## Laundry

Amole for laundering woolen goods. *Sci Am* 112:49 Ja 9 '15

Electricity in laundries. *Il Elec R & W Elec'n* 66:617-20 Ap 3 '15

Heating equipment of modern steam laundry. *Il plan Metal Work* 84:515-16 O 22 '15

Large laundry for handling ship washing: abstract. W: Scholz. *Am Soc M E J* 37:721-2 D '15

## Law

See also Arbitration and award; Automobile laws and regulations; Building laws; Commercial law; Contracts; Corporation law; Electric engineering—Laws; Electric railroads—Law; Engineering law; Federal reserve act; Forestry laws and legislation; Foundry laws; Government regulation of industry; Guaranties and sureties; Heating—Laws; Highway law; Inflammable liquids; International law; Labor laws; Legislation; Liens; Maritime law; Mechanics' liens; Mining laws; Municipal law; Negotiable instruments; Nuisances; Partnership; Patent laws and legislation; Patents; Personal injuries; Picketing; Plumbing laws and regulations; Police; Property; Public service corporations—Law; Railroad law; Sales; Street railroad law; Trademarks; Trusts; Industrial; Water laws; Water rights; Waterworks—Law; Workmen's compensation

## Terminology

Glossary of German and French legal terms. A. J. Wolfe and E. M. Borchard. *U S Bur For & Dom Com* 97:107-27 '15

Lawyers. See Patent lawyers

Leaching. See Hydrometallurgy

## Lead, South Dakota

Social improvement at Lead. *Eng & Min J* 100:798-9 N 13 '15

## Lead

Atomic weights of lead. *Sci Am* 111:469 D 5 '14

Contributions of the chemist to the lead industry. G. W. Thompson. *J Ind & Eng Chem* 7:987-8 N '15

Cost of producing lead. *Eng & Min J* 98:1073-4 D 19 '14

Electrolytic assay of lead. E. A. Lewis. *Metal Ind n* 13:463 N '15

Electrolytic lead deposits. F. C. Mathers and A. McKinney. *Met & Chem Eng* 13:338 My '15

Revision of the atomic weight of lead: the analysis of lead bromide. G. P. Baxter and T. Thorvaldson. *Am Chem Soc J* 37:1020-7 My '15

Revision of the atomic weight of lead: the analysis of lead bromide and chloride. G. P. Baxter and F. L. Grover. *Il Am Chem Soc J* 37:1027-61 My '15

Use of hydrofluoric acid in the separation of copper and lead from tin and antimony by means of the electric current. L. W. McCay. *Am Chem Soc J* 38:2375-81 N '14

See also Jamesonite; Lead metallurgy; Lead mines and mining; Plumbing

**Lead acetate**

Equilibrium in the system; lead acetate, lead oxide, and water, at 25° R; F. Jackson. *Am Chem Soc J* 36:2446-57 N '14; Same. *US Bur Stand Bul* 11:331-45 My 10 '15

Lead acetate test for hydrogen sulphide in gas. R. S. McBride and J. D. Edwards. *diags pls US Bur Stand Tech Pa* 41:1-46 '14

**Lead arsenates**

Arsenates of lead. H. V. Tartar and R. H. Robinson. *Am Chem Soc J* 36:1843-53 S '14

Valuation of commercial arsenate of lead. E. H. Robinson and E. V. Tartar. *J Ind & Eng Chem* 7:499-502 Je '15

**Lead borers**

Bugs bore into leaded cables. *II Eng N* 74:1006 N 18 '15

**Lead bromide**

Revision of the atomic weight of lead: the analysis of lead bromide. G. P. Baxter and T. Thorvaldson. *Am Chem Soc J* 37:1020-7 My '15

Revision of the atomic weight of lead: the analysis of lead bromide and chloride. G. P. Baxter and F. L. Grover. *Am Chem Soc J* 37:1027-47 My '15

**Lead chloride**

Revision of the atomic weight of lead: the analysis of lead bromide and chloride. G. P. Baxter and F. L. Grover. *Am Chem Soc J* 37:1047-61 My '15

**Lead hydrogen arsenate**

Equilibrium in the system disodium hydrogen arsenate, lead nitrate, and water at 25° C. B. E. Curry and T. O. Smith. *Am Chem Soc J* 37:1685-8 J1 '15

**Lead industry and trade**

Lead and zinc movement. *Eng & Min J* 100:397 S 4 '15

Lead statistics. *Eng & Min J* 99:57-61 Ja 9 '15

**Lead metallurgy**

Advantages of high-lime slags in the smelting of lead ores. S. E. Bretherton. *Am Inst Min E Bul* 104:1595-9 Ag '15; Abstract. *Met & Chem Eng* 13:768-7 O 15 '15; Discussion. 108:2479-81 D '15

Effect of Zn<sub>2</sub>As<sub>2</sub> upon the desilverization of lead. F. C. Newton. *Am Inst Min E Bul* 98:473-7 F '15; Same cond. *Met & Chem Eng* 13:181 Mr '15; Discussion. *Am Inst Min E Bul* 101:1170-3 My '15

Lead smelting at El Paso. H. F. Easter. *Am Inst Min E Bul* 104:1493-1506 Ag '15; Excerpts. *Eng & Min J* 100:356-7 Ag 28 '15; Abstract. *Met & Chem Eng* 13:814 N 1 '15

Metallurgy of lead in 1914. H. O. Hofman. *Eng & Min J* 99:89-91 Ja 9 '15

New mill of the Daly West mining co., Park City, Utah. L. O. Howard. *II plan Met & Chem Eng* 13:597-602 S 15 '15

Newnam hearth. W. E. Newnam. *II Am Inst Min E Bul* 106:2139-45 O '15; Same. *Eng & Min J* 100:628-30 O 16 '15; Excerpts. *Met & Chem Eng* 13:974 D 15 '15

Sampling lead bullion; excerpts. F. D. Weeks; H. F. Easter. *Met & Chem Eng* 13:930 D 1 '15

Smelting and refining of lead. H. O. Hofman. *Met & Chem Eng* 13:737-8 O 15 '15

**Lead mines and mining****Law**

United States mining statutes annotated. J. W. Thompson. *US Bur Mines Bul* 94:pt 2, 1039-42 '15

**Burma**

Bawdwin mines of the Burma corporation. *II map plan Eng & Min J* 99:177-80 Ja 23 '15

**Idaho**

New developments in the Coeur d'Alene, Idaho. H. I. Ellis. *II Eng & Min J* 100:337-40 Ag 28 '15

**Missouri**

Southeastern Missouri lead district in 1914. H. A. Wheeler. *Eng & Min J* 99:80-1 Ja 9 '15

**Lead ores**

Occurrence of silver in argentiferous galena ores. A. E. Nissen and S. L. Hoyt. *pls Econ Geol* 10:172-9 F '15

See also Jamesonite; Lead metallurgy; Lead mines and mining

**Lead plating**

Preparation and operation of all lead plating baths. F. C. Mathers. *Metal Ind n s* 13:184-5 My '15

**Lead poisoning**

Is the danger from lead poison among operators exaggerated? *Inland Ptr* 55:515 J1 '15

Lead poisoning in manufacture of storage batteries; abstracts. A. Hamilton. *Horseless Age* 35:430 Ap 7 '15; *Elec R & W Elec'n* 66:1056 Je 5 '15; *Eng M* 49:442 Je '15

Lead-poisoning symptoms. W. A. Evans. *Inland Ptr* 56:203 N '15

**Lead wool**

Lead wool as jointing material; abstracts. C. E. Reinicker. *II Am Gas Light J* 102:242-6 Ap 19 '15; *Eng & Contr* 48:520-2 Je 9 '15

**Leadership**

Deficiency in personality responsible for engineer's failure to receive recognition. G. F. Swain. *Eng Rec* 71:261-2 F 27 '15

**Leadite**

Experiences with leadite for jointing cast iron water mains. H. A. Symonds. *Eng & Contr* 44:247-8 S 29 '15

How to make good joints in cast iron water mains. W. C. Hawley. *Eng & Contr* 44:200-2 S 15 '15; Same abstr. *Eng Rec* 72:326 S 11 '15

**Least work, Theory of**

Arched reinforced-concrete conduits designed by the theory of least work. W. M. Smith. *Eng Rec* 71:648-52 My 22 '15; Discussion. 71:753 Je 12 '15

**Leather**

Contributions of the chemist to the leather industry. W. H. Teas. *J Ind & Eng Chem* 7:283 Ap '15

Effect of relative humidity on an oak tanned leather belt. W. Bird and F. W. Roys. *II Am Soc M E J* 87:447-9 Ag '15; Same. *Iron Tr R* 56:1315-17 Je 24 '15; Same. *Power* 42:169-71 Ag 3 '15; Summary. *Iron Age* 96:26-7 J1 1 '15; Discussion. *Am Soc M E J* 37:449-51 Ag '15

Manufacture of leather belting. F. H. Small. *Am Soc M E J* 37:879-82 D '15; Same. *Iron Tr R* 57:1174-7+ D 16 '15

**Leather trade**

British India. *US Sp Cons Rep* 72:290-6 '15

**Legal advertising rates. See Advertising—Rates****Legislation**

Business man and Congress. L. W. Moffett. *Iron Tr R* 56:1329-30 D 31 '14

Business men and public service. P. M. La Bach. *Ry R* 56:193-4 F 6 '15

Business men and public service. R. Blankenburg. *Ry R* 55:775-6 D 26 '14

Rural control of Congress. J. A. Emery. *Am Ind* 15:14-15 F '15

Tendencies toward inefficiency in legislation. R. Walker. *Ry Age* 53:220-1 F 5 '15

**See also Law****Lehigh Valley railroad**

Annual report for the fiscal year ended June 30, 1915. *Ry Age* 59:266-7, 303-6 Ag 13 '15

**Lenses**

Manufacture of optical glass in America. *Sci Am* 112:175 F 20 '15

New developments in the projection of light. L. C. Porter. *II Illum Eng Soc* 10:38-54 no 1 '15

New lens gives clear vision. *Sci Am* 112:101 Ja 30 '15

**Leprosy**

Concerning leprosy. *Sci Am* 113:208 S 4 '15

**Lethbridge, Alberta****Sewerage**

Design, construction and operation of Lethbridge sewage treatment works. *plan Eng & Contr* 43:401-3 My 5 '15

**Letter writing****See also Commercial correspondence****Letterheads****Specimens**

Letterheads and envelopes. *Inland Ptr* 55:208a-208h My '15

**Lettering**

Advantages of hand-lettering. A. G. Brenton. *Inland Ptr* 55:753-6 S '15

**Levees**

- Concrete versus stone revetment, in the Kaw valley levee work. E. D. Murray. *Il Concrete Cem* 6:202-4 Ap '15
- East side levee and sanitary district. T. N. Jacob. *Il diag map Assn Eng Soc J* 55:1-11 J1 '15
- Experience with cement guns in levee revetment. W. G. Caples. *Eng & Contr* 44:397-8 N 17 '15
- Experimental Mississippi river levees indicate possibility of eliminating seepage. C. O. Sherrill. *Il plan Eng Rec* 71:562-4 My 1 '15
- High levees will protect Indianapolis from floods. *Il map Eng Rec* 72:560-2 N 6 '15
- Indianapolis flood protection. *Il map Eng N* 74:961-5 N 18 '15
- Levee construction on Trinity river, Texas. O. W. Finley. *Eng & Contr* 44:sup29-30 O 6 '15
- Method and cost of levee enlargement with a tower dragline excavator. *Il diag Eng & Contr* 43:417-20 My 12 '15; Excerpt. *Eng M* 49:598-9 J1 '15
- Periodical levee slip in Helena, Ark. *Il Eng N* 72:1108 D 3 '14
- \$16,000,000 required for Los Angeles county flood protection. *diag Eng Rec* 72:232-3 Ag 21 '15
- Slotted pipe aids placing of hydraulic fill. A. M. Thompson. *Il Eng Rec* 71:534 Ap 24 '15

**Levels**

- Engineer's emergency level. A. P. Connor. *Il Power* 42:314 Ag 31 '15

**Lever**

- Suggestions in mechanisms; some curious geometric properties of articulated levers. S. D. Mott. *Sci Am S* 80:77 J1 31 '15

**Lewes, Vivian B., 1851-1915**

- Sketch. *por Illum Engr* 8:472 N '15

**Liberty, New York****Water supply**

- Improving Liberty water supply. H. W. Taylor. *Il Munic J* 38:390-1 Mr 25 '15

**Liberty bell**

- Fatigue and disease of metals. P. Kreuzspinter. *Iron Age* 95:950-1 Ap 29 '15
- Liberty bell and disease of metals. *Il Iron Age* 95:391-3 F 18 '15; Same. *Sci Am S* 79:236-7 Ap 10 '15

**Libraries**

- Library for accounting employees. *Elec Ry J* 46:953 N 6 '15
- Lighting of the Widener memorial library, Harvard university. *Il Elec R & W Elec'n* 67:330-2 Ag 21 '15
- Notes on library lighting. A. J. Philip. *diag Illum Engr* 8:465-71 N '15
- Wider use of public libraries. K. C. Walker. *Elec Ry J* 46:1040 N 20 '15

*See also* Classification; Engineering libraries; Library architecture; Library service

**Libraries, Engineering. See Engineering libraries****Libraries, Railroad. See Railroad libraries****Library architecture**

- Harry Elkins Widener memorial library, Harvard university, Cambridge, Mass.; views and plans. Brickb 24:pl 106-11 Ag '15
- Morris K. Jesup memorial library, Bar Harbor, Me.; views and plans. Brickb 23:pl 177-9 D '14
- Small town library. *Il plans Brickb* 24:9-11 Ja '15

**Widener memorial library, Harvard university. Il Arch & Bldg 47:295-301 Ag '15****Library buildings. See Library architecture****Library science**

*See also* Classification

**Library service**

- Progress of library service. *Sci Am* 113:285 O 2 '15

**Liens**

- Making water bills a lien on real property. *Eng & Contr* 42:425-6 N 4 '14

**Liens, Mechanics'. See Mechanics' liens****Life boats. See Lifeboats****Life preservers**

- Combination traveling-bag and life-preserver. *Il Sci Am* 113:276 S 25 '15
- Universal line of life preservers. *Il Int Marine Eng* 20:184-5 Ap '15

**Life saving**

- See also* First aid in illness and injury; Lifeboats; Lighthouses; Safety devices

**Life saving apparatus**

- Emergency marine gangway. *Il Sci Am* 112:410 My 1 '15

*See also* Lifeboats; Life preservers; Mine rescue work; Safety devices

**Lifeboats**

- New life-boat. *Il Sci Am* 112:491 My 29 '15

*See also* Davits

**Lifting magnets**

- Handling materials in manufacturing plants. R. L. Streeter. *Il Eng M* 50:238-44 N '15
- Igranite electric company magnet. *Il diag Engineer* 120:110 J1 30 '15
- Use of lifting magnets. *Il diag Engineer* 119:422-4 Ap 30 '15

**Light**

- Color of illuminants; with discussion. L. A. Jones. *diag Illum Eng Soc* 9:687-709 no 8 '14
- Formation of ozone in the upper atmosphere. J. N. Pring. *Sci Am S* 79:286-7, 303 My 1-8 '15
- Notes on the use of light in cinematograph work. *Illum Engr* 8:310-14 J1 '15
- Optical properties of diffusing media. *Illum Eng Soc* 10:353-402 no 5 '15
- Photo-electricity; the intimate relations of light and electricity. J. A. Fleming. *Sci Am S* 80:6-7 J1 3 '15
- Photographic value of various illuminants. *Illum Engr* 8:347 Ag '15
- Searching for a reason for eye fatigue. M. Luckiesh. *Elec W* 65:576-8 S 11 '15
- Sensation-white and color-matching white light. *Elec W* 65:1710 Je 28 '15
- Theory of cold light. W. D. Bancroft. *Illum Eng Soc* 10:289-95 no 4 '15; Same. *Am Gas Light J* 103:27-8 J1 12 '15; Same. *Sci Am S* 80:186-7 S 18 '15

*See also* Brightness; Color; Color blindness; Daylight, Artificial; Eye; Glare; Heliotropism; Infra-red rays; Light filters; Light projection; Light signals; Lighthouses; Lighting; Phosphorescence; Photochemistry; Photography; Photometry; Phototherapy; Radiation; Radioactivity; Reflection (light); Reflectors; Spectrum; Spectrum analysis; Ultra-violet rays; X rays

**Standards**

- New standard light source. L. A. Jones. *Am Gas Light J* 101:251-3 O 19 '14; Same. *Illum Eng Soc* 9:716-27; Discussion. 9:728-33 no 8 '14

**Units of brightness. J. R. Cravath. Elec W 66:60-1 J1 10 '15****Light, Audible. See Optophone****Light, Colored**

- Artificial daylight. H. E. Ives. *bibliog Il J Fr Inst* 177:471-99 My '14; Same. *Sci Am S* 78:396-8, 412-14 D 19-26 '14

**Artificial daylight in practice. M. Luckiesh. Il Elec W 66:71-3 J1 10 '15; Abstract. Eng M 49:318 S '15**

- Choice of a group of observers for heterochromatic measurements. H. E. Ives and E. F. Kingsbury. *Illum Eng Soc* 10:203-8 no 3 '15

**Development of three-color illumination. M. R. Pevear. Il Elec W 65:398-9 F 13 '15**

- Experiments with colored absorbing solutions for use in heterochromatic photometry. H. E. Ives and E. F. Kingsbury. *diag Illum Eng Soc* 9:795-813 no 8 '14; 10:253-8 no 3 '15

**Mobile color and stage lighting. B. Jones. Il plan Elec W 66:245-9, 294-7, 346-9, 407-9, 454-6 J1 31-Ag 28 '15****Spectacular illuminating effects at the Pan-Pacific exposition. Il Sci Am 112:180-1 F 20 '15****Light, Physiological effects of**

- Light-stroke. *Sci Am S* 79:407 Je 26 '15

- Light filters**  
 Light filters for use in photometry; with discussion. C. E. K. Mees. *Illum Eng Soc* 9: 990-7 no 9 '14  
 Mobile color and stage lighting. B. Jones. *Elec W* 66:454-6 Ag 28 '15  
 Photometry of gas-filled incandescent lamps; with discussion. C. H. Sharp. *Il Illum Eng Soc* 9:1021-32 no 9 '14  
 Use of light filters with the tassin metallographic apparatus. F. H. Getman. *Il diag J Ind & Eng Chem* 7:431 My '15
- Light projection**  
 Illumination of signs and building exteriors by projectors. *Il diag Elec R & W Elec'n* 66: 1008-9 My 29 '15  
 Incandescent lamps for projectors. L. C. Porter. *Il Gen Elec R* 18:371-6 My '15  
 Lamps for projection purposes; committee report. *Illum Eng Soc* 10:527-30 no 7 '15; Same. *Illum Engr* 8:446-8 N '15  
 Method for determining the range of searchlights. A. Blondel. *Illum Engr* 8:85-90, 153-9 F. Ap '15  
 Method of billboard lighting that saves cash. *Il Elec W* 66:1201 N 27 '15  
 New developments in the projection of light. L. C. Porter. *Il Illum Eng Soc* 10:38-54 no 1 '15  
 Projector lighting for the protection of bathing beaches. *Il Elec R & W Elec'n* 67:485 S 11 '15  
 Sign and building exterior illumination by projection. K. W. Mackall and L. C. Porter. *Il diag Gen Elec R* 18:282-7 Ap '15  
 Unusual lighting effects at night pageant. *Il Elec R & W Elec'n* 67:332-4 Ag 21 '15
- Light ships**  
 Lighthouse illumination. R. Haskell. *Illum Eng Soc* 10:207-18 no 3 '15
- Light signals**  
 Automatic drawbridge signal. *diag Eng Rec* 70: 680 D 19 '14  
 Beam-light signals on the Pennsylvania. *Ry Age* 58:61 Ja 8 '15  
 Lamp signals for day service on electric railways. *Il Eng N* 72:1260-1 D 24 '14  
 Position light signals on the Pennsylvania. R. R. *Il Ry R* 56:487-8 Ap 10 '15  
*See also Searchlights*
- Lighthouse service (United States)**  
 U. S. lighthouse service. G. R. Putnam. *Il diag Eng N* 73:614-19 Ap 1 '15; Abstract. *Sci Am* 113:157 Ag 21 '15
- Lighthouses**  
 Building a lighthouse on shifting sand. H. J. Shepstone. *Il Sci Am* 112:287-8 Mr 27 '15  
 Lighthouse illumination. R. Haskell. *Illum Eng Soc* 10:209-13 no 3 '15
- Equipment**  
 Inspection by automatic devices. E. O. Catford. *Il Engineer* 118:612 D 25 '14
- Lighthouses, Concrete**  
 Concrete superseding wood in lighthouse construction. J. G. McCurdy. *Il Concrete Cem* 6:198 Ap '15
- Lighting**  
 Art and science in home lighting; with discussion. G. W. Cassidy. *Il Illum Eng Soc* 10:55-81 no 1 '15; Abstract. *Elec W* 65:484-6 F 20 '15  
 Artificial daylight. H. E. Ives. *bibliog Il J Fr Inst* 177:471-98 My '14; Same. *Sci Am S* 78:396-8, 412-14 D 19-26 '14  
 Artificial daylight—its production and use. M. Luckiesh and F. E. Cady. *bibliog Illum Eng Soc* 9:838-64 no 8 '14; Same. *Am Gas Light J* 101:390-1 D 21 '14; Discussion. *Illum Eng Soc* 9:864-72 no 8 '14; Discussion. *Am Gas Light J* 101:391-4 D 21 '14  
 Bank lighting. F. L. Godinez. *Il Arch & Bldg* 47:256-7 J1 '15  
 Complexion and lighting effects. J. R. Cravath. *Elec W* 65:1228-9 My 15 '15  
 Converting night into day; what the inventor has done for oil, gas and electricity in illumination. *Il Sci Am* 112:586-64 Je 6 '15  
 Economies of home lighting; facts and figures on various systems, past and present. R. Trautschold. *Sci Am S* 79:198-9 Mr 27 '15  
 Effect of illumination on visual acuity. *Illum Engr* 8:385-6 S '15  
 Efficiencies of present-day illuminants; abstract. H. E. Ives. *Elec W* 65:1614 Je 19 '15  
 Efficiency of the eye under different conditions of lighting; the effect of varying the distribution factors and intensity. C. E. Ferree and G. Rand. *Il Illum Eng Soc* 10:407-47 no 6 '15  
 Eye and illumination. H. E. Mahan. *Gen Elec R* 18:368-72 Ap '15  
 Factors in illuminating engineering. F. K. Richtmyer. *Sibley J* 30:48-50 N '15  
 Ferree test for eye fatigue; with discussion. J. R. Cravath. *Illum Eng Soc* 9:1033-59 no 9 '14  
 Further experiments on the efficiency of the eye under different conditions of lighting. C. E. Ferree and G. Rand. *Il plan Illum Eng Soc* 10:448-501 no 6 '15  
 Glare in museum galleries; the psychological factor in the lighting problem. B. I. Gilman. *diag Arch Rec* 38:282-80, 362-78 Ag-S '15  
 Good and bad in recent lighting development. J. R. Cravath. *Il Elec W* 66:519-20 S 4 '15  
 Good light—a safety factor in casting plants. Foundry. *diag* 43:216-18 Je '15  
 Good lighting and its immediate effects from the economic standpoint. V. H. Mackinney and E. Stroud. *Inst E E J* 53:829-33 Je 15 '15; Abstract. *Elec W* 65:1425 My 29 '15  
 Good natural light—a safety factor. *Eng M* 49:435-6 Je '15  
 Holding up the mirror. F. L. Godinez. *Arch & Bldg* 47:51-2 F '15  
 Illuminating engineering in Germany. *Illum Engr* 8:460-1 N '15  
 Illuminating engineering in war time; with discussion. L. Gaster. *Illum Engr* 8:13-26 Ja '15  
 Illuminating engineering society, 9th annual convention, Washington, D. C., Sept. 20-22. *Elec R & W Elec'n* 67:619-24 O 2 '15  
 Illuminating engineering society 9th annual meeting. *Elec R & W Elec'n* 67:574-7 S 25 '15  
 Illuminating engineering society: report of the committee on progress. *Illum Eng Soc* 10: 515-61 no 7 '15; Same. *Illum Engr* 8:409-14, 445-50 O-N '15; Same cond. *Am Gas Light J* 103:273-9 N 1 '15  
 Illumination and the human eye. *Elec W* 65: 624-5 Mr 6 '15  
 Illumination in the law courts. A. S. Osborn. *Illum Engr* 7:554 D '14  
 Illumination of Panama-Pacific exposition. G. L. Bayley. *Il Elec W* 65:391-5 F 13 '15  
 Illumination systems for good lighting of offices. A. B. Oday and R. E. Harrington. *Il Elec W* 65:814 Mr 27 '15  
 Knowns and unknowns in the lighting of small interiors. J. R. Cravath. *bibliog Illum Eng Soc* 10:303-14 no 4 '15; Same. *Am Gas Light J* 103:49-51 J1 26 '15; Abstracts. *Elec R & W Elec'n* 66:315 My 1 '15; *Elec W* 65:1141 My 1 '15  
 Light as a factor of efficiency. W. A. D. Evans. *Il Textile World* 48:195-9, 354-7 N-D '14  
 Lighting efficiency. F. L. Godinez. *Arch & Bldg* 47:138-9 Ap '15  
 Lighting improvements, 1915; tabulation. *Munic Eng* 48:267 Ap '15  
 Lighting of rifle ranges. A. P. Trotter and others. *Il diag Illum Engr* 8:251-81 Je '15  
 Lighting of rooms through translucent glass ceilings; with discussion. E. J. Edwards. *Il Illum Eng Soc* 8:1011-20 no 9 '14  
 Lighting of the Widener memorial library, Harvard university. *Il Elec R & W Elec'n* 67:380-2 Ag 21 '15  
 Measurements for the household. *diag U S Bur Stand Circ* 55:68-81 '15  
 Notes on library lighting. A. J. Philip. *diag Illum Engr* 8:465-71 N '15  
 Ye Old Mitre tavern. *Il Illum Engr* 8:322-3 J1 '15  
 Planning of lighting installations. R. F. Pierce. *Il Am Gas Light J* 103:321-2 N 22 '15  
 Popular talk on semi-indirect lighting. R. F. Pierce. *Il diag Am Gas Light J* 102:369-72 Je 14 '15  
 Present practise in the use of tungsten filament lamps for the lighting of metal working plants; with discussion. A. L. Powell and R. E. Harrington. *Il Illum Eng Soc* 9: 814-38 no 8 '14

**Lighting—Continued**

- Railway classification yard lighting; with discussion. D. T. Morrison. *Il plans Eng Soc W* Pa 30:641-68 O '14
- Relation of light to the proof of documents: proper illumination of courts necessary to insure justice. A. S. Osborn. *Sci Am S* 78:250-1 O 17 '14; Same. *Illum Eng Soc* 9:998-1006; Discussion. 9:1006-10 no 9 '14
- Relative photographic and visual efficiencies of illuminants. L. A. Jones, M. B. Hodgson and K. Huse. *J Fr Inst* 180:481-7 O '15
- Restaurant lighting. F. L. Godinez. *Il Arch & Bldg* 47:336-8 S '15
- Symposium on illumination. *Am Gas Inst Pro* 9:pt 1, 902-38 '14
- Year's progress in illuminating engineering. *Illum Engr* 8:5-9, 45-50 Ja-F '15
- See also Air shafts; Brightness; Car lighting; Church lighting; Electric lighting; Factories—Lighting; Foundries—Lighting; Gas; Gas lighting; Glare; Lamps; Light projection; Lighthouses; Petroleum; Photometry; Schoolhouses—Lighting; Ships—Lighting; Street lighting; Theaters—Lighting

**Bibliography**

- Books on illumination. *Illum Eng Soc* 10:222-6 no 3 '15

**Cost**

- Comparative cost of candle light and electric light. *Elec R & W Elec'n* 66:1190-1 Je 28 '15
- Your lighting bill for 1925. A. W. Deininger. *Sci Am S* 80:137 S 13 '15

**Laws and regulations**

- Existing requirements regarding lighting in factories, schools, etc., in various countries. *Illum Engr* 8:381-3 S '15
- New British lighting regulations. *Illum Engr* 8:423 O '15
- New legislation. *Illum Eng Soc* 10:557-8 no 7 '15; Same cond. *Am Gas Light J* 103:279 N 1 '15
- Suggested code of lighting for factories, mills and other work places in the United States. *Illum Engr* 8:414-19, 451-5 O-N '15 (to be cont)

**Study and teaching**

- Illuminating engineering as a branch of technical instruction. C. E. Clewell. *diags Illum Eng Soc* 10:321-37; Discussion. 10:338-52 no 5 '15

**Tables, calculations, etc.**

- Calculation of illumination: description of method developed to overcome the difficulties encountered with indirect or semi-direct light sources. R. C. Powell. *Elec W* 65:1463-4 Je 5 '15
- Flux method of obtaining average illumination. F. A. Benford, Jr. and H. E. Mahan. *Illum Eng Soc* 10:593-603 no 7 '15
- Short cuts in calculations for lighting systems. R. F. Pierce. *Am Gas Light J* 103:289-92 N 8 '15
- Simplification of illumination calculations. A. S. McAllister. *Illum Eng Soc* 10:587-91 no 7 '15

**Lighting fixtures**

- Development and design of lighting fixtures in relation to architecture, interior decoration, and illumination. F. W. Thorpe. *Il diags Illum Engr* 8:102-19; Discussion. 8:97-9, 120-44 Mr '15
- Eye-sight vs. glaring lights and the fixture. F. L. Godinez. *Arch & Bldg* 46:479-80 D '14
- Lighting fixtures profitable side line. *Il Metal Work* 32:736-7 D 4 '14

See also Electric light fixtures; Street lighting fixtures

Lighting plants, Municipal. See Electric plants, Municipal

**Lightning**

- Lightning without rain. E. J. D. Cox. *Sci Am* 113:141 Ag 14 '15
- Nature of ball lightning. K. Wolf. *Sci Am S* 80:54-5 JI 24 '15
- Thunderstorm and its phenomena. W. J. Humphreys. *Il J Fr Inst* 178:755-73 D '14

See also Concrete, Effect of lightning on

**Lightning arresters**

- Automatic-resistance horn-type lightning arrester. *Il Elec R & W Elec'n* 66:38-9 Ja 2 '15; *Elec W* 65:122 Ja 9 '15
- Ground fittings for lightning arresters. *Il Elec Ry J* 46:114 JI 17 '15
- High voltage arrester for telephone lines. E. P. Peck. *Il Gen Elec R* 18:189-94 Mr '15
- Horn-gap lightning arrester. *Il diag Elec W* 66:161 JI 17 '15
- Lightning arrester for brick plant. A. P. Broadhead. *Il Elec R & W Elec'n* 67:974 N 27 '15
- Lightning-arrester installation. T. Croft. *diags Elec R & W Elec'n* 67:512-16 S 18 '15
- Lightning arresters; abstract. C. C. Garrard. *diag Elec W* 66:1041 N 6 '15
- Modern lightning arresters. C. C. Raitt. *Il diags Power* 40:874-6 D 22 '14
- Protecting lightning grounds. *Elec R & W Elec'n* 67:979 N 27 '15
- Protection and control of industrial electric power. C. P. Steinmetz. *Il Gen Elec R* 18:990-1 O '15
- Protection of railway signal circuits against lightning disturbances. E. K. Shelton. *Gen Elec R* 18:1127-8 D '15
- Universal lightning arrester. *Il diag Elec R & W Elec'n* 67:82-3 JI 10 '15

**Lightning conductors**

- Lightning and lightning rods. *Sci Am S* 80:160 S 4 '15
- Lightning rods. *Sci Am S* 79:397 Je 19 '15
- Lightning rods for farm buildings. *Bldg Age* 37:46-6 S '15
- Protecting buildings against lightning. G. H. Armstrong. *Il Elec W* 66:402-6 Ag 21 '15; Abstract. *Eng M* 50:462-3 D '15
- Protection of life and property against lightning. O. S. Peters. *J Fr Inst* 180:473-6 O '15
- Smelter stacks and lightning. *Il Eng & Min J* 98:1006-6 D 5 '14

**Lightning protection**

- Lightning and the automobile. C. L. Johnson. *Sci Am* 111:507 D 19 '14
- Lightning attraction for water and gas pipes. H. W. Spang. *Eng & Contr* 44:840 O 27 '15
- Protection from lightning. *Sci Am* 113:299 O 2 '15
- Report of the committee of A. E. R. A. on lightning protection. *Elec Ry J* 46:748-7 O 9 '15

See also Lightning arresters; Lightning conductors

Lightning rods. See Lightning conductors

**Lignite**

- Gas explosions in lignite fired boiler plants; abstract. P. M. Grempe. *Am Soc M E J* 37:233 Ap '15
- Gasification of rough lignite; abstract. R. Klostermann. *Am Soc M E J* 37:182 Mr '15

**Lime**

- Advantages in use of commercially hydrated lime over ordinary slacked lime. E. W. Lazell. *Concrete Cem* 6:139-40 Mr '15
- Agricultural lime. *Sci Am S* 80:112 Ag 14 '15
- Chemical and physical properties of lime. *Sci Am S* 80:388 D 4 '15
- Chemical lime. *Sci Am S* 80:47-8 JI 17 '15
- Definition and classification of lime. *Sci Am S* 80:133 Ag 28 '15
- Electricity in lime manufacture. A. C. Hewitt. *Il Elec R & W Elec'n* 67:181-4 JI 31 '15
- Excess lime method of water purification. *Engineer* 120:128 Ag 6 '15
- Hydrated lime. *Sci Am S* 80:91 Ag 7 '15
- Hydrated lime in road concrete. *Eng N* 73:503 Mr 11 '15
- Hydrated lime in spouted concrete. G. J. Griesenauer. *Concrete Cem* 7:138 N '15
- Kilns for lime burning. *Sci Am S* 80:7 JI 3 '15
- Lime burning. *Sci Am S* 80:67 JI 31 '15
- Lime concrete extensively used in India and Burma. *Eng Rec* 71:797-8 Je 26 '15
- Method for the determination of the immediate lime requirements of soils. W. H. MacIntire. *Il J Ind & Eng Chem* 7:864-7 O '15
- Modern hydrated lime plant. R. K. Meade. *Il diags J Ind & Eng Chem* 7:427-30 My '15
- Newberry rapid lime determination. E. G. Pierce. *J Ind & Eng Chem* 7:258-9 Mr '15



- Lime—Continued**  
 Reburning of lime from alkali waste and other forms of precipitated carbonate of lime. R. K. Meade. *diag Met & Chem Eng* 13:289-90 My '15  
 Road engineer experiments with hydrated lime. *Eng Rec* 71:798-9 Je 26 '15  
 Use of lime hydrates in factory-made concrete units. *Concrete Cem* 7:186-7 N '15  
*See also Cement*
- Lime acetate**  
 Hardwood distillation industry in America. E. H. French and J. R. Withrow. *II Met & Chem Eng* 13:80-9 Ja '15; Same. *J Ind & Eng Chem* 7:47-55; Discussion. H. O. Chute. 7:55-6 Ja '15
- Limestone**  
 Limestone production and its uses. E. C. Eckel. *Eng & Min J* 98:989 D 5 '14  
 Prehistoric irrigation canal in New Mexico. S. M. Johnson. *II Eng N* 73:561 Mr 25 '15
- Lincoln, Paul Martyn, 1870-**  
 President Am. Inst. E. E. C. F. Scott. *por Eng N* 73:390-1 F 25 '15
- Lincoln highway**  
 Brick pavement on old gravel road foundation for portion of the Lincoln highway. F. A. Churchill. *Eng & Contr* 43:546 Je 18 '15  
 Cooperation the keynote of Lincoln highway movement. *Eng Rec* 71:274 F 27 '15  
 Lincoln highway. H. V. Magonigle. *Am Inst Arch J* 8:168 Ap '15  
 Tree planting along the Lincoln highway. G. R. Nevitt. *Am For* 21:928-9 S '15  
 Work of the Lincoln highway committee. E. C. Jensen. *Am Inst Arch J* 2:559-60 D '14
- Lincoln memorial**  
 Marble columns of the Lincoln memorial. J. P. Kirsch. *Sci Am* 112:267 Mr 20 '15
- Linen**  
*See also Hemp; Textile industry and fabrics*
- Linotype**  
 Linotype slugs used as plate base. *II Inland Ptr* 56:400 D '15  
 Machine composition. J. S. Thompson. *See monthly numbers of Inland printer*  
 Measurement of linotype matter. E. M. Keating. *Inland Ptr* 55:319 S '15  
 Modern methods of composing type. *II Sci Am* 80:325-6 N 20 '15  
 Seventy years of inventions. *Sci Am* 112:517 Je 5 '15  
 Signs of the times in composing-machinery. C. D. Bollinger. *Inland Ptr* 56:184-6 N '15  
*See also Typesetting machines*
- Linotype operators**  
 King of the speed merchants. Holo Pau, Honolulu. *Inland Ptr* 54:636 Ja '15
- Linseed oil**  
 Drying properties of linseed oil treated with cobalt, lead and manganese elaeostearates. I. E. Wise and R. A. Duncan. *J Ind & Eng Chem* 7:202-5 Mr '15  
 Iodine number of linseed and petroleum oils. W. H. Smith and J. R. Tuttle. *U S Bur Stand Tech Pa* 87:1-17 '14; Same. *J Ind & Eng Chem* 6:994-8 D '14  
 Use of linseed oil to protect concrete from destruction by alkali. L. A. Waterbury; R. A. Hart. *II Concrete Cem* 6:90-3 F '15
- Lipases**  
 Studies on enzyme action: the lipase of soy beans. K. G. Falk. *Am Chem Soc J* 37:649-53 Mr '15
- Liquefaction of gases**  
 Explosions in air liquefaction plants and their causes; abstract. W. Bramkamp. *Am Soc M E J* 87:401-3 Jl '15  
*See also Liquid air*
- Liquid air**  
 Electrical conductivity imparted to liquid air by alpha rays. *Sci Am* 87:191 Mr 20 '15  
 Experiments on the distillation of liquid air in a magnetic field. R. S. McBride. *Am Chem Soc J* 37:1715-18 Jl '15  
 Industrial uses for liquid air. *Eng M* 49:118-21 Ap '15  
 Liquid air as an explosive; abstract. M. Przyboraki. *Am Soc M E J* 87:341-2 Je '15
- Liquid air in industry.** *J Ind & Eng Chem* 7:255 Mr '15  
 Manufacture of liquid air. *diags Sci Am* 80:204-5 S 25 '15
- Liquid crystals**  
 Optical anisotropy of liquid crystals. B. O. Lehmann. *Sci Am* 87:80 Ja 30 '15  
 Sudden changes in the form of liquid crystals. O. Lehmann. *II Sci Am* 87:43 Ja 16 '15  
 Surface tension due to intermolecular attraction. O. Lehmann. *diags Sci Am* 80:341 N 27 '15
- Liquid fuel**  
*See also Alcohol as fuel; Automobile engines—Fuel; Gas and oil engines—Fuel; Gasoline; Petroleum as fuel*
- Liquid meters**  
 Improved Lea v-notch meter integrator. *II Iron Age* 96:973 O 23 '15  
 Laboratory for investigating and testing liquid flow meters of large capacity; abstracts. W. S. Glele. *II diag Am Soc M E J* 37:165-9 Mr '15; Power 41:69-71 Ja 12 '15; Discussion. *Am Soc M E J* 37:169-70 Mr '15  
 Shapley solution meter. C. Shapley. *diag Eng & Min J* 100:885 N 27 '15
- Liquids**  
 Drop weight method for the determination of the surface tension of a liquid. J. L. R. Morgan. *Am Chem Soc J* 37:1481-7 Je '15  
 Surface tensions of water, methyl, ethyl and isobutyl alcohols, ethyl butyrate, benzene and toluene. T. W. Richards and L. B. Coombs. *II diag Am Chem Soc J* 37:1656-76 Jl '15  
*See also Boiling points; Capillarity; Fluids; Hydraulics; Hydrodynamics; Liquid air; Solution (chemistry)*
- Liquor problem.** *See Prohibition*
- Liquors.** *See Brewing; Wine*
- Lithium**  
 Lithium in soils. L. A. Steinkoenig. *J Ind & Eng Chem* 7:425-6 My '15
- Lithography**  
 Architectural draughtsmen: Richard Parkes Bonington. H. Winslow. *II Am Inst Arch J* 3:159-67 Ap '15  
*See also Engraving*
- Little Rock, Arkansas**  
 Bridges  
 Reconstruction of piers of Little Rock Junction bridge across the Arkansas river. C. E. Smith. *diags plan Eng & Contr* 44:85-3, 124-7 Ag 4, 18 '15
- Littoral drift.** *See Erosion*
- Live stock**  
 Feeding mine animals. *Eng & Min J* 100:884 N 27 '15  
*See also Feeding and feeding stuffs; Sheep*
- Transportation**  
 Hearing on western freight rate advances. *Ry Age* 58:700-1, 973-4 Mr 26, My 7 '15  
*See also Swine—Transportation*
- Lloyd's**  
 Lloyd's annual report. *Int Marine Eng* 19:530-1 D '14
- Load (mechanics)**  
 Curves for strength and deflection of very long columns. E. L. Robinson. *Eng N* 73:1108-9 Je 10 '15  
 Distribution of vertical soil pressures; tests at Engineering experiment station of Pennsylvania state college. J. A. Moyer. *II Eng Rec* 71:330-2 Mr 13 '15  
 Is a part stronger than the whole? R. Fleming. *diags Eng N* 74:1026-7 N 25 '15  
 Large brick piers tested at laboratory of Bureau of standards; abstracts. J. H. Griffith and J. G. Bragg. *II Eng Rec* 71:460-1 Ap 10 '15; *Eng N* 74:242-8 Ag 5 '15; *Ind Eng* 15:108 S '15  
 Results of some tests of I-beam connections. C. S. Whitney. *diags Eng & Contr* 44:35-7 Jl 14 '15  
 Safe eccentric loading of rivets. J. Di Stasio. *Sch Mines Q* 35:213-22 Ap '14; *Excerpt. Eng & Contr* 42:512 D 2 '14  
*See also Bridges—Load; Strains and stresses*

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- Load dispatching. See Electric plants—Central stations—Management
- Load factor**  
Definition of load factor. Power 42:127 J1 27 '15
- Loading and unloading**  
Cost of loading bricks into a box car by means of a portable belt conveyor. A. C. Haskell. *diag Eng & Contr* 44:204 S 15 '15  
Electrically operated loader. *il Sci Am* 112: 886+ Ap 24 '15  
Italian machine for loading coal tenders. *il Sci Am* 113:225 S 11 '15  
Making records with loading machines. F. N. Loughnan. *il Ry Age* 58:1443 Je 18 '15  
New portable car unloader. *il Concrete Cem* 5: 270 D '14  
Ore unloaders at Philadelphia. *il Iron Tr R* 56:1009-10 My 20 '15  
Portable car unloader for handling sand and gravel. *il Concrete Cem* 6:222-3 Ap '15  
Saving time in loading and unloading. *il diags Sci Am* 118:452 N 20 '15  
Unloading cargoes by portable machines. *il Int Marine Eng* 20:105-6 Mr '15  
Wagon loaders for broken stone. *il Eng N* 74:176-7 J1 22 '15  
*See also* Conveying machinery; Dumping appliances; Freight handling; Mechanical handling
- Locks (canals and rivers)**  
Lock gates for Dallas-Cello canal. *diags plan Eng Rec* 70:314-16 D 5 '14  
Mitering lock gate at Keokuk presents novel features. B. H. Parsons. *il diags Eng Rec* 72:344-6 S 18 '15  
One huge single-lift lock at Louisville will guard the entrance to the Portland canal. *il plan Eng Rec* 71:794-6 Je 26 '15  
Sea water to rise into fresh-water canal. P. Whitham. *il map Eng N* 74:246-7 Ag 5 '15  
Submersible lock gate at Keokuk operated by compressed air. B. H. Parsons. *il diags Eng Rec* 72:446-50 O 9 '15  
Tests of butterfly valves result in modified design. *diag Eng Rec* 72:419 O 2 '15  
200,000 yards of concrete placed for \$800,000 in Lake Washington canal lock. *il diag plan map Eng Rec* 72:441-3 J1 31 '15
- Locomobiles**  
High economy of locomobile. W. Turnwald. Power 42:242 Ag 17 '15  
Lanz locomobiles and the war. *il Power* 42:232-3 Ag 17 '15  
Locomobile driven by suction producer gas; abstract. Gwosdz. *diags Am Soc M E J* 37: 718-15 D '15  
Self-contained power plant; Buckeye engine company, Salem, Ohio. *il diag Iron Age* 95: 1056-7 My 13 '15  
Superheated steam unit; some remarkably economical German engines. W. H. Miller. *il Sci Am* 112:290-1+ Mr 27 '15  
Two American-built locomobile power plants. *il diags Elec W* 65:407-11 F 13 '15
- Locomotive boilers**  
Boiler design in respect to heating surface: calculations based on cylinder horsepower requirements. F. J. Cole. *Ry Age* 57:1079-81 D 11 '14; Same cond. *Ry Age (Mech ed)* 89: 5-6 Ja '15  
Boiler shop methods. *diags Ry Age (Mech ed)* 88:837 D '14  
Boiler washing and filling system for small roundhouses. W. Wells. *plan Ry Age (Mech ed)* 89:251-2 My '15  
Circulating system for locomotive boilers. *il Ry Age (Mech ed)* 88:644-5 D '14  
Federal government boiler inspection report. *Ry Age* 57:1196-7 D 25 '14  
Locomotive boiler design and mechanical stokers. *Engineer* 120:156 Ag 13 '15  
Master boiler makers' association 9th annual convention. *Ry R* 56:731-4 My 29 '15  
Master boiler makers' convention. *Ry Age (Mech ed)* 89:309-17 Je '15  
Master boiler makers' 9th annual convention. *Ry Age* 58:1129, 1165-9 My 28-Je 4 '15  
Patching boilers according to law. G. G. Lynch. *diags Ry Age (Mech ed)* 88:634-6 D '14  
Repairing locomotive boiler tubes. N. H. Ahl-kuhl. *il plans Ry Age (Mech ed)* 89:33-5 F '15
- Report of the chief inspector of locomotive boilers. F. McManamy. *Ry R* 56:19-20 Ja 2 '15  
Results of the locomotive boiler inspection law. F. McManamy. *Ry Age* 58:621-2 Mr 19 '15; Same cond. *Ry Age (Mech ed)* 89:190-1 Ap '15; Same cond. Power 41:898-900 Je 29 '15  
System of water circulation for locomotive boilers. *il Ry Age* 57:1131-2 D 13 '14  
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- Locomotive brakes**  
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- Locomotive engineers**  
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Arbitration of western engineers' and firemen's demands. *Ry Age* 57:1043-4, 1084-5, 1123-4; 58:97-8, 125-7, 198-200, 232-4, 264-6, 307-10, 363-5, 409-11, 448, 751-2 D 4-18 '14, Ja 15-Mr 12 Ap 2 '15  
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Obedience to orders; abstention from liquors. H. W. Williams. *Ry Age* 57:1088 D 11 '14  
Points for the road foreman. W. P. Danforth. *Ry Age* 57:1130-1 D 18 '14  
Testimony in the western wage arbitration. *Ry R* 58:156-7 Ja 30 '15  
Western engineers' and firemen's demands. *Ry Age (Mech ed)* 89:56-7 F '15
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- Locomotive fireboxes**  
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Removing and replacing fireboxes. *Ry Age (Mech ed)* 89:316 Je '15  
Riegel design of locomotive firebox, Delaware Lackawanna & Western R. R. *il diag Ry R* 56:811-12 Mr 6 '15  
Wrought iron in locomotive fireboxes; abstract. G. Hammer. *Am Soc M E J* 37:344 Je '15
- Locomotive firemen**  
American fireman in France. W. G. Landon. *Ry Age* 58:267-8 Ag 13 '15  
Arbitration award in enginemen's wage controversy; text. *Ry Age* 58:962-5 My 7 '15  
Arbitration of western engineers' and firemen's demands. *Ry Age* 57:1043-4, 1084-5, 1123-4; 58:97-8, 125-7, 198-200, 232-4, 264-6, 307-10, 363-5, 409-11, 448, 751-2 D 4-18 '14, Ja 15, Mr 12, Ap 2 '15  
Award of arbitrators in the western wage controversy. *Ry R* 56:624-5 My 8 '15  
Performance of locomotive firemen. *Ry Age (Mech ed)* 89:346 J1 '15  
Recommended practices for the employment and training of firemen; T. E. A. committee report; abstracts. *Ry R* 57:338-40 S 11 '15; *Ry Age* 58:473-4 S 10 '15  
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- Locomotive grates**  
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- Locomotive headlights**  
American railway master mechanics' association committee report. *Elec Ry J* 45:1116 Je 12 '15  
American railway master mechanics' association committee report. *Ry R* 56:847 Je 19 '15  
Locomotive headlight requirements. E. S. Pearce. *diags Ry Age (Mech ed)* 89:451-3 S '15  
Locomotive headlight; with discussion. J. L. Minick. *Illum Eng Soc* 9:909-36 no 9 '14

**Locomotive shops**

- Boiler shop methods. diags Ry Age (Mech ed) 88:637 D 14
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- Care of lye tanks. J. A. Jesson. diag Ry Age (Mech ed) 89:188 Ap 15
- Chicago & Alton railroad—one large building houses all departments of locomotive repair shops at Bloomington, Illinois. 11 diag plan Eng Rec 71:487-8 Ap 17 15
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- Piece work and bonus systems in the boiler shop. N. H. Ahlström. Ry Age (Mech ed) 89:240-2 My 15
- Railroad locomotive repair shop organization. H. Gardner. Ry Age 59:697-9 O 15 15
- Shop efficiency; report of International railway general foremen's association committee. Ry Age (Mech ed) 89:421-3 Ag 15; Same cond. Ry Age 59:156-6 J1 23 15
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- Locomotive sparks**
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- Good features of tender tank design. W. R. Hedeman. diags Ry Age (Mech ed) 89:224-5 My 15
- Self-trimming locomotive tender. diag (supp) Engineer 120:280 S 17 15
- Tender derailments. G. W. Little. Ry Age (Mech ed) 89:58 F 15
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- Finley yard of the Southern railway at North Birmingham, Ala. 11 plans Ry R 57:366-60 S 18 15
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- Locomotive trade**
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- Cars and locomotives ordered in 1914. Ry R 56:36-41 Ja 2 15

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- Contrast in locomotive practice. H. T. Walker. 11 Sci Am 113:60 J1 17 15
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- Eight-wheel switching locomotives for the Lehigh & New England R. R. 11 diags Ry R 57:293-4 S 4 15
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- Examples of recent locomotives of the Atlantic, ten-wheel American, Mogul, and switching type arranged in order of total weight. Ry Age (Mech ed) 89:396 Ag 15
- Examples of recent locomotives of the Mallet, Santa Fe and Consolidation types arranged in order of total weight. Ry Age (Mech ed) 89:292 Je 15
- Examples of recent locomotives of the mountain and Pacific and Mikado types arranged in order of total weight. Ry Age (Mech ed) 89:338-9 J1 15
- Factor of adhesion. E. F. Givin. Ry Age 59:454 S 10 15
- Factor of adhesion. G. Baxter. Ry Age 59:638 O 8 15
- Factor of adhesion in steam locomotives. E. F. Givin. Ry Age 58:961 My 7 15
- Fireless locomotives; abstract. Am Soc M E J 87:344 Je 15
- First 4-8-2 locomotives in Canada. W. H. Winterrowd. 11 diags Ry Age (Mech ed) 89:556-61 N 15
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- Locomotives ordered in America for foreign countries. 11 Ry Age 59:1011-13 N 28 15
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- Mineral traffic engine, Barry railway. 11 Engineer 118:531 D 4 14
- Modernising locomotives on the Kansas City Southern. 11 Ry Age 58:371-2 F 26 15
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Possible advantages to be derived from compounding superheater locomotives. L. H. Fry. *Ry R* 56:808-9 Ja 12 '15

Possibilities of the future. J. B. Ennis. *Ry Age (Mech ed)* 59:14 Ja '15

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Steam locomotives of to-day. *Am Soc M E J* 37:21-3; Discussion. 37:23-35 Ja '15

Steam locomotives of today: discussion. F. J. Cole. *Ry R* 56:213-15 F 13 '15

Tank locomotives for the Gold Coast railways. *Il Engineer* 119:201 F 26 '15

Thirty years of locomotive progress in Egypt. E. L. Ahrons. *diags Engineer* 118:499-501 N 27 '14

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Traveling engineers' association 23d annual convention. *Ry Age* 58:473-4, 505-13 S 10-17 '15

Traveling engineers' association 23d annual convention. *Ry R* 57:337-41, 360-2 S 11-18 '15

Two Pacific type locomotives of high power. *Il diags Ry Age* 57:1183-9 D 25 '14

Types of locomotives on British railways. *Engineer* 119:82 Ja 15 '15

Utilization of adhesion weight in steam locomotives; abstract. L. Schneider. *Am Soc M E J* 37:232-3 Ap '15

Why use a high factor of adhesion in steam locomotives? *Ry Age* 58:773 Ap 9 '15

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**Classification**

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Economic value of a locomotive. G. S. Goodwin. *Ry Age (Mech ed)* 59:118-20 Mr '15; Same. *Ry R* 56:257-60 F 20 '15; Same cond. *Ry Age* 58:305-6 F 19 '15

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Upkeep of locomotives on Irish railways. *Engineer* 120:60 J1 16 '15

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Locomotive front ends and draft appliances. C. D. Young; C. E. Chambers. *Ry Age* 58:273-4 F 12 '15; Same cond. *Am Soc M E J* 37:28-9 Ja '15; Same cond. *Ry Age (Mech ed)* 59:9-10 Ja '15

Road tests for determining front end conditions. E. S. Barnum. *diags Ry Age (Mech ed)* 59:454-6 S '15

**Driving boxes**

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Repairing driving boxes. P. F. Smith. *Il diags Ry Age (Mech ed)* 59:527-9 O '15

**Equipment and supplies**

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Feed water heater used on geared locomotives. H. S. Johnson. *diags Ry Age (Mech ed)* 59:226 My '15

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Locomotive and train supplies on the Frisco. *Il Ry Age* 58:697-9 Mr 26 '15

Main reservoir ball joint connection. *Il diags Ry Age (Mech ed)* 59:254 My '15

Modern appliances on large locomotives: T. E. A. report. *Ry Age* 59:505-7 S 17 '15; Same. *Ry Age (Mech ed)* 59:499-502 O '15; Abstract. *Eng M* 50:480-1 D '15

Mudge-Slater spark arrester. G. W. Bender. *Il Ry R* 57:280-1 Ag 23 '15

Present status of the variable exhaust. J. S. Bell. *Il diags Ry R* 56:797-9 Je 12 '15

Rods, tires and wheels: discussion at convention of the General Foremen's association. *Ry R* 57:78-9 J1 17 '15; *Ry Age* 59:155 J1 23 '15; *Ry Age (Mech ed)* 59:420-1 Ag '15

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Locomotives at the Smithsonian institution. *Il Sci Am S* 80:285 O 30 '15

Railway exhibits at the Panama-Pacific exposition. H. J. Kennedy. *Il Sci Am S* 80:60-2 J1 24 '15

**Failures**

Definition of locomotive failures. *Engineer* 119:89-90 Ja 23 '15

Engine failures, their causes and cure. J. E. Anderson. *Ry Age (Mech ed)* 59:587-8 N '15

Failures or breakdowns of locomotives. R. Weatherburn. *diags Engineer* 118:547-8, 575-7 D 11-18 '14

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Analysis of dependent sequence as a guide to fuel economy. H. Emerson. *Ry R* 57:19-23 J1 3 '15; Same cond. *Ry Age* 58:1057-9 My 21 '15; Same cond. *Ry Age (Mech ed)* 59:273-4 Je '15

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Efforts at fuel economy, Rock Island lines.

W. J. Tollerton. Ry R 57:354-5 S 13 '15

Fuel association convention; papers on powdered coal, prevention of smoke, fuel stations, mechanical stokers and fuel oil. Ry Age (Mech ed) 89:271-83 Je '15

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Fuel oil for locomotives. G. M. Bean. diags Ry R 56:752-6 Je 5 '15; Same cond. Power 41: 900-1 Je 29 '15; Same cond. Ry Age (Mech ed) 89:280-1 Je '15; Same cond. Ry Age 58: 1115-16 My 28 '15; Same cond. Sci Am 113: 82 J1 31 '15

Fuel oil installations on the Grand Trunk Pacific Ry. J. G. LeGrand. diags Ry R 56:828-31 Je 13 '15

Improved performance with old-type coaling facilities. J. S. Williams. Ry Age (Mech ed) 89:86 F '15

International railway fuel association, 7th annual convention. Ry Age 58:1113-19 My 28 '15

International railway fuel association, 7th annual convention. Ry R 56:896-708 My 22 '15

Powdered coal. W. L. Robinson. Ry Age 58: 1055-6 My 21 '15; Summary, with discussion. Ry R 56:896-7 My 22 '15

Powdered coal, its preparation and use in locomotives and stationary boilers. W. L. Robinson. Ry R 56:773-6 Je 5 '15; Abstracts. Ry Age (Mech ed) 89:271-3 Je '15; Power 41: 798-4 Je 8 '15; Colliery 35:646-8 J1 '15; Sci Am S 80:139 Ag 28 '15

Pulverized fuel for locomotives. Ry Age 58: 941-3 Ap 30 '15; Same. Ry Age (Mech ed) 89:218-16 My '15; Same cond. Eng M 49:440-1 Je '15

Railroad fuel economy. M. C. M. Hatch. Ry Il 56:506-9 Ap 10 '15; Same cond. Ry Age 58: 449-51 Mr 12 '15

Saving coal. C. Maier. Ry Age (Mech ed) 89: 442 S '15

Saving of fuel on locomotives by the use of feedwater preheating; abstract. Strahl. diags Am Soc M E J 37:606-7 O '15

See also Locomotives—Smoke problem

**Inspection**

Argument against extension of locomotive boiler inspection service. Ry R 56:317-20 Mr 6 '15

Bill extending boiler inspection to entire locomotive. Ry R 56:127 Ja 23 '15

Federal boiler inspectors seek entire control of locomotives. Ry Age 58:293 F 19 '15

Federal inspection of locomotives and tenders. Ry Age 58:451 Mr 12 '15

Federal locomotive inspection. Ry Age 59:906 N 12 '15

Inspection of locomotives and tenders. Ry Age 58:1052-3 My 21 '15

Inspection of locomotives and tenders. Ry Age (Mech ed) 89:284 Je '15

Rules for federal inspection of locomotives and tenders. Ry R 57:807-11 S 4 '15; Same abr. Ry Age 59:426-8 S 3 '15

See also Locomotive boilers

**Lubrication**

Double action force feed cylinder lubricator. diags Ry Age 59:612 O 1 '15; Same. Ry Age (Mech ed) 89:489-90 S '15

Lubricating rails on curves to reduce wear. Eng N 73:476 Mr 11 '15

**Manufacture**

Heat treated and alloy steels for locomotive parts. C. D. Young. Ry Age 57:1129-30 D 13 '15; Same. Ry Age (Mech ed) 89:18-14 Ja '15

Reciprocating and revolving parts; alloy and heat-treated carbon steel. E. A. F. Campbell. Ry Age (Mech ed) 89:215-16 My '15

Rolled and forged steel pistons. W. W. Scott, Jr. Il diags Ry R 56:48-52 Ja 9 '15; Same cond. Ry Age (Mech ed) 89:343-5 J1 '15; Abstract. Am Soc M E J 37:191-2 Mr '15

Turning engine bolts. C. L. Dickert. Il diags Ry Age (Mech ed) 89:193-4 Ap '15

Use of high-grade alloy steels to reduce weight of locomotives. H. V. Wille. Am Soc M E J 87:31-2 Ja '15

**Material**

See Locomotives—Manufacture

**Models**

Model locomotive built by apprentices at Dunmore, Pa. Il Ry Age (Mech ed) 89:456 S '15

**Operation**

Economic value of a locomotive. G. S. Goodwin. Ry Age (Mech ed) 89:118-20 Mr '15; Same. Ry R 56:257-60 F 20 '15; Same cond. Ry Age 58:305-8 F 19 '15

Effect of water level on superheat. M. C. M. Hatch. Ry Age 58:191 J1 30 '15

Value of a freight locomotive from transportation standpoint. N. D. Ballantine. Ry R 56:596-9 My 1 '15; Same. Ry Age 58:885-8 Ap 23 '15

**Painting**

Painting locomotives and steel cars. M. L. Sims. Ry Age (Mech ed) 88:641-2 D '14; Abstract. Am Soc M E J 37:120-1 F '15

**Performance**

Diagram for determining percentage of maximum tractive effort. L. R. Pomeroy. Ry Age (Mech ed) 89:453-4 S '15

Fuel and tonnage performance on the Seaboard. L. G. Plant. Il Ry Age 58:405-8 Mr 5 '15

Locomotive performance on the Great Northern railway. Engineer 119:549-50, 533 Je 4-11 '15

Number of tons of rail per mile of road; formula for the tractive force of a locomotive. Colliery 36:144 O '15

Superheater locomotives and grade revision. Ry Age 59:637-8 O 8 '15

Superheater locomotives and grade revision. P. M. La Bach. Ry Age 59:469-71, 848 S 10, N 5 '15

**Repair**

Engine house repair work. M. Vallen. Ry Age (Mech ed) 89:85-6 F '15

Factors in locomotive maintenance. E. Becker. Ry Age (Mech ed) 89:140 Mr '15

Locomotive running repairs. E. Cordeau. Ry Age (Mech ed) 89:37-9 Ja '15

Patching boilers according to law. G. G. Lynch. diags Ry Age (Mech ed) 88:834-6 D '14

Repair work at small engine houses. G. H. Roberts. Ry Age (Mech ed) 88:832-4 D '14

Repairing driving boxes. P. F. Smith. Il diags Ry Age (Mech ed) 89:527-9 O '15

Running repairs. Ry Age (Mech ed) 89:41-2 Ja '15

See also Locomotive shops

**Smoke problem**

Abatement of locomotive smoke in Cincinnati. G. H. Funk. Ry Age (Mech ed) 89:566 N '15

Difficulties accompanying the prevention of dense black smoke and its relation to the cost of fuel and locomotive repairs; report. Ry R 57:337-8 S 11 '15

Educating enginemen in smoke elimination. Ry Age (Mech ed) 89:216 My '15

Firing up engines at engine houses. Ry Age (Mech ed) 88:636 D '14

Locomotive smoke in Chicago. Ry Age 58:694 Mr 26 '15

Smoke prevention; abstracts. E. W. Pratt. Ry Age 58:1059 My 21 '15; Ry R 56:698-9 My 22 '15; Ry Age (Mech ed) 89:274-5 Je '15

Smoke prevention with oil burning locomotives; report; abstracts. Ry Age 59:473 S 10 '15; Ry Age (Mech ed) 89:509 O '15

Smokeless locomotive operation without special apparatus. H. H. Maxfield. Ry R 57:426-9 O 2 '15; Same cond. Ry Age (Mech ed) 89:561-2 N '15; Same cond. Power 42:481-2 O 5 '15

Washing locomotive smoke. M. D. Franey. diag plan Ry Age 59:553-60 S 24 '15; Same. Ry Age (Mech ed) 89:511-13 O '15; Same. Power 42:551-3 O 19 '15; Same cond. Eng N 74:906-7 N 4 '15; Excerpt. Ry R 57:387-8 S 25 '15

**Spring rigging**

Spring rigging design. J. P. Shamberger. diags Ry Age (Mech ed) 89:15-18 Ja '15

**Springs**

Characteristics of plate springs. G. S. Chiles. Il Ry Age (Mech ed) 89:161-3, 219-22, 340-3, 392-5 Ap-May, J1-Ag '15

**Locomotives—Springs—Continued**

Master blacksmiths' convention; discussion of spring making and repairing. *Il Ry Age (Mech ed)* 89:474-5 S '15

**Stokers**

See Stokers, Mechanical

**Superheaters**

Discussion on superheating. H. B. Oatley. *Am Soc M E J* 37:29 Ja '15

Locomotive superheaters. G. L. Bourne. *Ry Age* 58:98 Ja '15; Same. *Ry Age (Mech ed)* 89:12-13 Ja '15

Locomotive superheaters. R. M. Ostermann. *diags Am Soc M E J* 37:988-90 J '15

Modern appliances on large locomotives: T. E. A. report. *Ry Age* 59:505-6 S 17 '15; Same. *Ry Age (Mech ed)* 89:499-500 O '15; Abstract. *Eng M* 50:480 D '15

Railroad session of the Chicago section, American society of mechanical engineers. *Ry R* 56:84 Ja '15 '15

Removing indentations in superheater smoke tubes. H. M. Brown. *diags Ry Age (Mech ed)* 89:40 Ja '15

Small-smoke-tube superheaters for locomotives; abstract. Metzeldin. *Am Soc M E J* 37: 607-8 O '15

Superheater locomotives and grade revision. *Ry Age* 59:537-8 O 8 '15

Superheater locomotives and grade revision. P. M. La Bach. *Ry Age* 59:489-71, 848 S 10, N 5 '15

**Testing**

Lateral stresses in rails on straight track. G. L. Fowler. *diag Ry Age* 58:1231-3 Je 11 '15

Lateral stresses on rails in curved tracks. G. L. Fowler. *Il Ry Age* 59:319-22 Ag 20 '15

Locomotive tests on the Chicago & North Western. *diags Ry Age* 58:93-4 Ja 15 '15

Road tests for determining front end conditions. E. S. Barnum. *diags Ry Age (Mech ed)* 89:454-6 S '15

Tests of a mountain type locomotive on the Rock Island. W. J. Tollerton. *Il Ry Age* 58: 829-31 Ap 18 '15

**Valves and valve gear**

Application of piston valves to slide valve cylinders. *Il Ry Age* 58:456 Mr 12 '15

Automatic drifting valve. *diag Ry Age* 59:246 Ag 6 '15

Automatic drifting valve. *diags Ry Age* 59:912 N 12 '15; Same. *Ry Age (Mech ed)* 89:593-4 N '15

Cylinders and valve gears. G. W. Rink. *Ry Age* 58:750 Ap 2 '15

Discussion at convention of the General foremen's association. *Ry R* 57:76-8 J '17 '15

Effect of valve gear on locomotive operation. W. E. Preston. *Ry Age (Mech ed)* 89:505-7 O '15

Heart of the locomotive; the reason for the grasshopper valve motions. C. H. Claudy. *Il diags Sci Am* 118:76+ J '24 '15

International railway general foremen's association; committee report. *Ry Age (Mech ed)* 89:417-20 Ag '15; Same cond. *Ry Age* 59:102-4 J '18 '15

Kingan-Ripken valve gear device. *Il Ry Age (Mech ed)* 89:483-4 S '15

Laying out the southern valve gear. H. Cornell. *Ry Age (Mech ed)* 89:386 Ag '15

Locomotive safety valve. *diag Ry Age (Mech ed)* 89:255 My '15

Piston valve packing rings. W. F. Lauer. *diags Ry Age (Mech ed)* 89:583 N '15

Relief valve for superheater locomotives. W. B. Middleton. *diags Ry Age (Mech ed)* 89:416 Ag '15

Safety cut-out valve. *diags Ry Age (Mech ed)* 89:44-5 Ja '15; Same. *Ry Age* 58:708 Mr 26 '15

Slide valve lubrication on the Buffalo, Rochester & Pittsburgh. *diags Ry Age* 59:283-4 Ag 13 '15

Soo line Walschaert valve gear. W. Smith. *diag Ry R* 57:311-12 S 4 '15

Southern locomotive valve gear. R. S. Mounce. *Il diags Ry Age (Mech ed)* 89:59-61 F '15

Southern locomotive valve gear. W. Smith. *diag Ry R* 57:214-15 Ag 14 '15

Systematic valve setting on locomotives. J. R. Britton. *Ry R* 56:799-800 Je 12 '15; Excerpts. *Ry Age (Mech ed)* 89:368 J '15

Valve gear design and locomotive operation. W. E. Preston. *diags Ry Age* 59:511-13 S 17 '15

Walschaert valve gear designed for variable lead. W. Smith. *Ry R* 57:256-6 Ag 28 '15

Young locomotive valve gear. *diags Ry R* 57: 312-13 S 4 '15

**Bibliography**

List of references on locomotive valve gear. *Locomotive Firemen and Enginemen's Magazine* 58:509-15 My '15

**Wheels**

Energy contained in revolving wheels and locomotive axle rods. W. E. Symons. *Ry Age* 59:455 S 10 '15

Locomotives, Electric. See Electric locomotives

Locomotives, Gas and oil

Equalization of masses in motor driven locomotives and oscillations due to it; abstract. H. Henich. *Am Soc M E J* 37:558 S '15

Gasoline locomotive haulage; its cost as compared to mule haulage at mines of Trosper coal co., Bradel, Ky. *Il Colliery* 35:547-8 My '15

Gasoline locomotives. A. H. Ehle. *Eng M* 48: 915-17 Mr '15; Same. *Sci Am S* 79:243 Ap 17 '15

Gasoline switching locomotive. *Il plan Ry Age* 58:101-2 Ja 15 '15

Switching locomotives driven by gasoline-engine power. *Il plan Eng N* 73:762-3 Ap 22 '15

Locomotives, Industrial

Oil geared construction locomotive. *Il Eng & Contr* 43:579-80 Je 30 '15; *Eng Rec* 72:32 J '15

Small locomotives for construction and industrial service. *Il Eng N* 73:964-5 My 20 '15

Locomotives, Mine

Developments in electrical apparatus during 1914. J. Liston. *Il Gen Elec R* 18:87-8 F '15

Gasoline locomotives in relation to the health of miners. O. P. Hood. *Am Inst Min E Bul* 94:2607-11 O '14; Discussion. 100:892-4 Ap '15

Modern electric mine locomotive. G. Bright. *Il Am Inst E E Pro* 34:1615-20 Ag '15; Same. *Colliery* 36:145-6 O '15

Modern mine haulage motor. C. W. Larson. *Il Gen Elec R* 18:264-8 Ap '15

Storage-battery locomotives. *Colliery* 35:259-60 D '14

Underground haulage by storage-battery locomotives in the Bunker Hill & Sullivan mine. J. W. Gwinn. *Il Am Inst Min E Bul* 98:239-47 F '15; Discussion. 101:1189-97 My '15

Lodges

Details of an Indiana fishing lodge. *Il plan Bldg Age* 37:39-40 S '15

Loft buildings

Concrete manufacturing buildings in Hoboken. N. J. *Il plans Arch & Bldg* 47:869-72 O '15

National cloak and suit co's. building. *Il diag Arch & Bldg* 46:451-3 N '14

Logging. See Lumbering

Logwood

Emergency use of logwood. L. J. Matos. *Textile World* 49:114-16 Ap '15

Logwood dyes. *Textile World* 49:548-9 Ag '15

London, England

**Architecture**

Church towers, steeples, and spires of Sir Christopher Wren. R. R. Phillips. *Il Brickb* 24:185-9, 228-32 Ag-S '15

**County hall**

London county hall. *diags Engineer* 120:147-8 Ag 13 '15

**Electricity supply**

Centralization of London energy supply. *Elec W* 64:1137 D 12 '14

Linking up the London electric supply stations. *Engineer* 120:16-17 J '15

**Lighting**

Electric lighting in London. *Engineer* 119: 360 Ap 9 '15

**London, England—Lighting—Continued**

Illuminating engineering in war time; with discussion. L. Gaster. *Illum Engr* 8:13-26 Ja '15

Lights out: some comments in the press on the lighting conditions in London. *Illum Engr* 7:516-18 N '14

London in the dark. R. K. Cummings. *Il Munic Eng* 48:814 My '15

London's lighting during the war. *Illum Engr* 8:463-4 N '15

Street lighting of London. W. B. Conant. *Il Munic Eng* 48:333-6 Je '15

**Railroads**

Railway problem of London. map Engineer 119:619-20, 632-3 Je 25 '15

**Rapid transit**

Extension of the Bakerloo tube. *Il plans map Engineer* 119:29-31, 56-8, 92-4 Ja 2-22 '15

London county council tramways. Engineer 120:13 Jl 2 '15

**Traffic**

Growth of London passenger traffic. *Eng N* 73:1223 Je 24 '15

London traffic dangers. *Sci Am S* 79:213 Ap 3 '15

London traffic in 1913. A. Stanley. *Elec Ry J* 46:622-3 S 25 '15

**Water supply**

Water supply of London. Engineer 120:266 S 17 '15

**London & South-western railway**

Electrification on the London and South-western railway. *Il diags Engineer* 120:289-91, 310-13, 342, 346-9 S 24-O 3 '15

New electrification work on London suburban railroads. *Elec R & W Elec'n* 67:852-4 N 6 '15

Suburban electrification. *Il Elec Ry J* 46:225 Ag 7 '15

**Long Island**

Coast erosion and protection on Long Island and New Jersey. G. O. Case. map *Eng N* 74:348-51, 388-91, 438-42 Ag 19-S 2 '15

**Long Island railroad**

Long Island railroad adopts light, steel trailers. *Il diags Elec Ry J* 46:136-8 Jl 24 '15

Operation in 1914. map *Ry Age* 58:814-16 Ap 16 '15

**Longitude**

Longitude determinations of great accuracy. O. B. French. *Il Eng N* 74:537-8 S 23 '15

Longitudes by wireless telegraphy. F. B. Littell. *Sci Am* 112:382-3 Ap 24 '15

Washington-Paris longitude by radio signals; a valuable application of wireless communication. F. B. Littell and G. A. Hill. *Sci Am S* 79:266-7 Ap 24 '15

**Longleaf pine. See Pine****Longview, Texas****Water supply**

Water supply of Longview, Texas. P. E. Green. *Am Water Works Assn J* 2:416-21 Je '15

**Loomis Institute, Windsor, Connecticut**

Heating equipment in Loomis institute. *Il plan Metal Work* 83:354-5 Mr 5 '15

Plumbing equipment in Loomis institute. *Il diags plan Metal Work* 83:323-6 F 26 '15

**Looms**

Automatic loom. *Il diags Engineer* 120:84-6, 88, 132 Jl 23, Ag 6 '15

Improved loom. *diag Textile World* 48:632-4 Mr '15

Lock washers for draper looms. *Il Textile World* 48:695 S '15

Thin-plate preventer for looms. *diag Textile World* 48:453-4 F '15

**Lorries. See Motor trucks; Motor trucks, Military****Los Angeles, California**

Los Angeles annexes more territory. B. A. Heinly. *Eng N* 73:956 My 13 '15

Panama canal and the ports of the Pacific. A. J. Quigley. *Il maps Eng M* 48:650-3 F '15

**Architecture**

First church of Christ, Scientist. *Il diags plans Brickb* 24:pl 86-8 Je '15

**Public works**

Cost of cement, Los Angeles municipal plant. F. C. Finkle; O. E. Clemens. *Eng N* 73:229 F 4 '15

Los Angeles nears realization of city power plan. *Il Eng Rec* 72:167 Ag 7 '15

Water-works farming and forestry by Los Angeles. B. A. Heinly. *Eng N* 73:746 Ap 15 '15

**Sanitary affairs**

Garbage and rubbish disposal in Los Angeles. S. C. Simons. *Il plan Munic J* 88:799-803 Je 10 '15

Method and cost of refuse collection and disposal in Los Angeles. A. C. Hansen. *Eng & Contr* 44:255-6 S 29 '15

**Sewerage**

Beat scheduled time five months in building huge De la Brea sewer. *Il Eng Rec* 72:130-2 Jl 31 '15

**Water supply**

Design and methods and cost of constructing the Los Angeles city trunk line, connecting aqueduct to distribution system. B. A. Heinly. *Il diags Eng & Contr* 43:390-4 My 5 '15

See also Los Angeles aqueduct

**Wharves**

Municipal wharves and sheds at Los Angeles. *Il diags Eng N* 73:824-5 Ap 29 '15

**Los Angeles aqueduct**

Aqueduct outlet cascades. *Il diags Eng N* 74:456-6 S 2 '15

Plan for municipal irrigation from the Los Angeles aqueduct. B. A. Heinly. map *Eng N* 73:344-6 F 18 '15

Sanitary features of the Los Angeles aqueduct. E. O. Slater. map *J Ind & Eng Chem* 7:622-5 Jl '15

**Lost articles**

Handling lost articles. *Elec Ry J* 45:28 Ja 2 '15

**Louisiana****Industries and resources**

Petroleum in Texas and Louisiana. A. J. Hazlett. *Eng & Min J* 99:137-9 Ja 16 '15

**Louisville, Kentucky****Bridges**

Direct-lift span provides 55-foot clearance over Louisville and Portland canal. *Il Eng Rec* 72:199-200 Ag 14 '15

**Sewerage**

Beargrass Creek storm-water channel at Louisville, Ky. J. H. Kimball. *Il diag plan Eng N* 72:1256-60 D 24 '14

**Louisville & Nashville railroad**

Abstract of annual report. map *Ry Age* 59:846-7 N 5 '15

Louisville & Nashville investigation. *Ry Age* 58:413-14 Mr 5 '15

**Low temperature. See Temperature, Low****Lowell, Massachusetts****Water supply**

Lowell filtration plant for removing iron and manganese from water. W. B. Conant. *Il plan Munic J* 89:613-15 O 21 '15

**Lubricants. See Lubrication and lubricants****Lubrication and lubricants**

Arrangements to maintain constant oil supply for large generating units. *diag Elec W* 66:25 Jl 3 '15

Automobile lubrication. C. W. Stratford. *Il Sci Am S* 79:392-3, 412-14 Je 19-26 '15; Same. *Horseless Age* 35:879-81; 36:16-19 Je 30-Jl 7 '15

Bearing lubricating system. *Il Power* 42:638 N 16 '15

Central oiler for vertical crankpin. *Il Power* 41:735 Je 1 '15

Chart illustrating the proper lubrication of the standard motor car chassis; with explanation. *Il Sci Am* 112:13 Ja 2 '15

Circulating-oil system of lubrication. plans *Elec W* 65:411 F 13 '15

## Lubrication and lubricants—Continued

- Clutch drive lubricator. *Il* Power 42:329-30 S 7 '15
- Compressed air grease cups. *diag* Mach 21:718 My '15
- Counter-current lubricating oil cooler. *diag* Iron Age 96:199 J1 22 '15
- Cylinder friction and lubrication testing apparatus. A. Flowers. *diag* Power 42:208-10 Ag 10 '15
- De La Vergne oil reclaiming. *Il* *diag* Power 42:336-7 S 7 '15; Iron Age 96:1103-4 N 4 '15
- Elevator-rail greaser. *diag* Power 41:82-3 Ja 19 '15
- F. E. Wells lubricant pump. *Il* *diag* Mach 21:679-80 Ap '15
- Keystone grease retarder. *diag* Power 41:117-18 Ja 26 '15
- Laps and lapping; abstracts. W. A. Knight and A. A. Case. *diags* Am Soc M E J 37:451-6 Ag '15; Iron Tr R 57:24-6 J1 1 '15; Mach 21:976-8 Ag '15; Discussion. Am Soc M E J 37:456-8 Ag '15
- Laws of lubrication of journal bearings. M. D. Hersey. Am Soc M E J 37:534-7; Discussion. 37:537-8 S '15
- Lubricating oil for Diesel engines and air compressors. H. Moore. Engineer 120:176 Ag 20 '15
- Lubricating oil tests. R. C. Merchant. Colliery 35:615-1 Je '15
- Lubricating oils in the metal trades. F. Wiessner. Metal Ind n s 13:188 My '15
- Lubrication. J. W. Fromeyer. Power 41:721-2 My 25 '15
- Lubrication of ball bearings. A. V. Farr. Elec W 65:925-6 Ap 10 '15
- Lubrication of ball bearings. L. G. Long. Mach 21:934-15 J1 '15
- Lubrication of car journals. W. A. Clark. Ry Age (Mech ed) 89:19-20 Ja '15
- Lubrication of journal bearings. Iron Age 96:25-8 J1 '15
- Lubrication of pneumatic tools. Ry R 57:276-7 Ag 28 '15
- Lubrication troubles. Int Marine Eng 20:512 N '15
- Machine tool lubricant pump. *Il* Ry Age (Mech ed) 89:589-90 N '15
- Method of lifting oil for a gravity-feed system by use of condenser vacuum. A. Kuylenstierna. *diags* Elec W 66:1149 N 20 '15
- Motor cylinder lubrication; abstract. G. S. Bryan. Am Soc M E J 37:293-4 My '15
- Nugent pressure return oiling system. *Il* Power 41:90 Ja 19 '15
- Oil economizer. *diags* Power 42:745-6 N 30 '15
- Oil troubles experienced in the refrigeration system. A. G. Solomon. Power 42:234-5 Ag 17 '15
- Phenix oil and graphite cylinder lubricator. *diag* Power 41:780-1 Je 8 '15
- Properties of lubricating oils. O. J. May. Horseless Age 35:338 Mr 10 '15
- Quick method for testing the non-staining quality of textile oils. T. T. Gray. *Il* Textile World 49:568-9 Ag '15
- Slide valve lubrication on the Buffalo, Rochester & Pittsburgh. *diags* Ry Age 59:283-4 Ag 13 '15
- Testing lubricating oils. A. H. Gill. Power 41:522-3 Ap 13 '15
- Tests of lubricants. H. M. Baxter. Ry Age (Mech ed) 89:225-6 My '15
- Theory of lubrication. L. Ubbelohde. Gen Elec R 18:966-72, 1074-81, 1118-21. O-D '15
- Use and abuse of oil at mines. C. T. Thomesen. Colliery 35:665-8 J1 '15
- What makes a good lubricant. H. Tipper. Power 42:452-3 S 28 '15
- See also Automobile engines—Lubrication; Bearings; Castor oil; Graphite; Locomotives—Lubrication; Oils and fats
- Ludington, Michigan**
- Sewerage
- Sewer construction at Ludington. G: W. Clark. *Il* Munic J 38:62-4 Ja 21 '15
- Lumber**
- Electricity in the largest lumber mill; Weyerhaeuser co., Everett, Wash. A. H. Onstad. *Il* Elec W 66:1080-1 N 13 '15
- Electricity in the lumber industry. E. F. Whitney. *Il* *diags* plans Am Inst E E Pro 33:1823-62 D '14; Discussion. 34:439-51 Mr '15
- One-third of our lumber wasted. Am For 21:876-7 Ag '15
- Production of lumber in 1913. tables U S Agric Bul 232:1-32 '15
- Proper manner of ordering lumber. T. O. Wood. Ry Age (Mech ed) 89:574 N '15
- Substitutes for expensive lumber. W. H. Clifton. Ry Age 58:1045-6 My 21 '15; Same. Ry R 56:691-2 My 22 '15; Same. Ry Age (Mech ed) 89:288-9 Je '15
- See also Forests and forestry; Lumbering; Pine; Sawmills; Timber; Wood; Wood-working machinery
- Lumber drying**
- Discoloration of maple in the kiln. R. C. Judd. J Ind & Eng Chem 7:920 N '15
- Norfolk & Western humidity-controlled dry kiln for lumber. W. H. Lewis. *Il* plans Ry Age (Mech ed) 89:452-4 S '15; Same. Ry Age 59:431-3 S 3 '15
- Lumber handling**
- Application of electric power in a lumber yard. *Il* *diag* Elec R & W Elec'n 66:400-1 F 27 '15
- Automatic handling of lumber with aid of electric motors and solenoids. *Il* Elec W 66:704 S 25 '15
- Covered slip and pier with gantry cranes for handling lumber. *diags* Eng N 74:484-5 S 3 '15
- Log-handling equipment at Arrowrock dam. C. H. Paul. *diags* map Eng N 74:200-1 J1 29 '15
- Lumber operations on the Atlantic coast; modern lumber steamer and complete terminals under construction for shipping lumber from Florida to New York. *diags* Int Marine Eng 20:126-3 Mr '15
- Lumber trade**
- American lumber market. E. B. Hazen. Am For 21:208-12, 576-81 Mr-Apr '15
- Canadian lumber competition. H. D. Langille. *Il* Am For 21:130-9 F '15
- China and Indo-China markets for American lumber. F. H. Smith. U S Bur For & Dom Com 104:1-39 '15
- European war and the lumber trade. R. C. Bryant. Am For 20:881-6 D '14
- Forest products federation. E. A. Sterling. Am For 21:55-6 Ja '15
- Japanese markets for American lumber. F. H. Smith. U S Bur For & Dom Com 94:1-16 '15
- Lumber industry inquiry. Am For 21:939-40 S '15
- Philippine markets for American lumber. F. H. Smith. U S Bur For & Dom Com 100:1-16 '15
- War and lumber. Sci Am 113:194 S 4 '15
- See also Cedar; Northern white cedar association
- Lumbering**
- Electricity in the lumber industry. E. F. Whitney. *Il* Am Inst E E Pro 33:1823-31 D '14
- Laking. W. R. Brown. *Il* Am For 21:628-36 My '15
- Logging Rasak and Lagan. T. R. Helms. *Il* Am For 21:1050-3 N '15
- Southern cypress. W. R. Mattoon. *Il* U S Agric Bul 272:11-17 '15
- Topographic surveys for logging operations. E. A. Marshall. *Il* *diag* Eng N 73:1112-15 Je 10 '15
- See also Lumber trade
- Luminosity of animals.** See Phosphorescence
- Lunch rooms**
- Industrial betterment. F. E. Cardullo. Mach 22:182-3 N '15
- See also Steam tables
- Lusitania (steamship)**
- Scientific savagery. Engineer 119:433-4 My 14 '15
- War, humanized and de-humanized. Sci Am 112:468 My 23 '15
- What sank the Lusitania? Sci Am 112:488 My 29 '15
- Lye**
- Lye hulling of corn for hominy. J. W. Marden and J. A. Montgomery. J Ind & Eng Chem 7:850-3 O '15
- Lye tanks**
- Care of lye tanks. J. A. Jesson. *diag* Ry Age (Mech ed) 89:188 Ap '15



Lyndon, Lamar  
Builder of the Austin dam. por Elec R & W  
Elec'n 66:937 My 22 '15  
Lyne furnace. See Furnaces  
Lynn, Massachusetts

#### Railroads

Track elevation at Lynn. C. B. Breed. II diag  
plans Eng N 74:533-7 S 16 '15

#### Streets

Street paving in Lynn. H. T. Rich. II Munic  
J 33:283-4 Mr 4 '15

#### Water supply

Lynn waterworks improvement. W. B. Conant.  
II Munic J 39:661-2 O 28 '15

## M

Macadamized roads. See Roads, Macadamized

McChord, Charles C.

Sketch. por Ry Age 58:627 Mr 19 '15

Machine design. See Machinery—Design

Machine expense

Distributing overhead expense. N. T. Ficker.  
Eng M 50:390-400 D '15

Machine shop management

Brief on management; testimony of Carl G.  
Barth before the Federal commission on in-  
dustrial relations. Iron Age 96:1066-8 N 4 '15

Illinois Central tool system; standardization  
and distribution include a central tool room  
with an accurate cost system. O. D. Kinsey.  
II Ry Age (Mech ed) 89:361-4 J1 '15

Inspection system for machine shops. W. B.  
Wessels. Mach 21:451-3 F '15

Jobbing machine shop cost system. II Iron Age  
96:883-5 O 14 '15

Modern estimating methods. A. A. Dowd. II  
diags Mach 21:463-9 F '15

Production and premium system. A. J. Schnei-  
der. Mach 21:795-6 Je '15

Safety organization of a machine shop. L. D.  
Burlingame. II Mach 22:303-9 N '15

Spacing of machines. Mach 21:723 My '15

Using the electric-power meter to measure  
wasted production. R. E. Loper. Eng M 49:  
231-4 My '15

Utilization of time study data. R. T. Kent.  
Iron Age 95:1178-81 My 27 '15; Same. Iron  
Tr R 56:1109-13+ Je 3 '15; Same. Ind Eng  
15:98-103 S '15

See also Electric railroads—Shops; Locomo-  
tive shops; Machine shop practice; Produc-  
tograph; Railroads—Shops; Repair shops;  
Scientific management; Shop management

Machine shop practice

Clips for securing data tags to steam gages  
and safety valves. C. L. Dickert. diags Ry  
Age (Mech ed) 89:131-2 Mr '15

Diagram for determining cutting time. I. Schel-  
beck. Mach 21:473 F '15

Doing lathe work on all-ganged gang drills. II  
diags Mach 21:740-2 My '15

Drawing metal tubes of special section. C. L.  
Lucas. II diag Mach 21:457-9 F '15

Economical handling of odd machining jobs.  
A. A. Dowd. diags Iron Age 96:556-9 Mr 11  
'15

Electric power in the machine shop. A. L. De  
Leeuw. Iron Tr R 57:888-90+ O 7 '15

Fitting crown brasses on a draw-cut shaper.  
II Mach 21:718 My '15

Ford methods and the Ford shops. H. L. Ar-  
nold; F. L. Faurote. II Eng M 47:331-58,  
507-32, 567-92, 587-86; 48:33-60, 338-66, 704-  
21, 859-76 Je-O, D '14, F-Mr '15

Increasing production: meeting the fatigue  
factor at Studebaker works. H. E. Barr. II  
Iron Age 95:298-9 F 4 '15

Individual versus group drive machine tools.  
C. Fair. Am Inst E E Pro 34:2715-21 N '15

Machining a piston ring. S. L. Robinson. II  
Power 42:24-5 J1 6 '15

Machining and assembling shrapnel cases.  
C. A. Tupper. diags Iron Age 96:570-3 S 9  
'15

Machining castings in the automatic screw  
machine. E. Whitney. diags Mach 21:381-2  
Ja '15

Machining flywheels. II diags Mach 21:813-15  
Je '15

Machining high-explosive shells. C. A. Tupper.  
diag Iron Age 96:806-9 O 7 '15

Machining irregular contours. A. A. Dowd.  
diags Mach 21:536-43 Mr '15

Machining motor cycle parts. D. T. Hamilton.  
II Mach 21:377-80 Ja '15

Machining motor truck sprockets and drums.  
A. A. Dowd. diags Horseless Age 35:436-9  
Mr 31 '15

Machining of a shrapnel shell case: the Reed-  
Prentice system. diags Iron Age 95:73-4 Ja  
7 '15

Machining shrapnel shells. D. T. Hamilton. II  
Mach 21:619-39 Ap '15; Same abr. Sci Am S  
80:12-13 J1 3 '15

Machining shrapnel shells; tool equipment  
used on the Potter & Johnston automatic  
chucking and turning machine. II diags Mach  
21:572-5 Mr '15

Machining steel motor truck wheels. A. A.  
Dowd. diags Horseless Age 34:883-5 D 16 '14

Machining thin bronze bushings. A. A. Dowd.  
diags Mach 21:980-2 Ag '15

Making cartridge cases. D. T. Hamilton. II  
diags Mach 21:651-6 Ap '15; Excerpt. Sci  
Am S 80:29-30 J1 10 '15

Making fuse parts. II diags Mach 21:641-50  
Ap '15

Making superheated steam gate valves. II  
Iron Age 95:845-7 Ap 15 '15

Making the Gilbert wood pulley. II Mach 21:  
483-6 F '15

Making vertical forming tools; practice of the  
Windsor machine co. C. F. Schlegel. II diags  
Mach 21:865-71 D '14

Manufacture of chain. F. H. Mayoh. II diags  
Mach 21:817-20 Je '15

Manufacture of shrapnel. II diag Metal Ind  
n s 13:137-9 Ap '15

Manufacture of the Diesel engine; production  
processes and the plant of the Busch-Sulzer  
bros., St. Louis. O. J. Abell. II diags plan  
Iron Age 95:57-64 Ja 7 '15

Master blacksmiths' convention; discussion  
of shop kinks. diags Ry Age (Mech ed) 89:  
480-1 S '15

Problem in slotting and indexing. D. A. Hamp-  
son. II diags Mach 22:135-6 O '15

Progress in machine shop methods. E. R. Nor-  
ris. II Iron Tr R 57:879-82+, 747-50 O 7-14 '15

Sweep-milling and shaving operations on  
pistol frames. II diag Mach 21:886-7 Ap '15

Testing Locke steel sprocket chain. E. K.  
Hammond. II Mach 22:24-7 S '15

Tool room notes. A. R. Davis. diags Ry Age  
(Mech ed) 88:689-9 D '14

Valve part manufacturing on a bench lathe. II  
diags Mach 22:49-50 S '15

See also Broaching; Chucks; Drafting room  
practice; Drilling and boring; Dynamos;  
Engines; Forging; Foundry practice; Gear  
cutting; Grinding and polishing; Hobbing;  
Lathes; Machine shop management; Machine  
tools; Machinery; Planing machines; Rivet-  
ing; Sheet metal work; Welding

Machine shops

Convenient power-house machine shop. II Elec  
W 65:1622 Je 19 '15

Cranes for the machine shop and foundry.  
H. M. Lane. diags Iron Age 96:246-3 J1 29  
'15

Electric locomotive repair shops, New York,  
New Haven & Hartford R. R., Van Nest,  
New York. diag plans Ry R 57:863-5 S 18 '15

Electricity in harvesting machinery works. II  
Elec R & W Elec'n 67:745-50, 883-3 O 23, N  
13 '15

Homestead repair shops. II plan Iron Tr R  
56:659-65 Ap 1 '15

Hot-blast heating in machine shop and found-  
ry. (Engineers' study course) C. L. Hub-  
bard. diags Power 40:853-80 D 15 '14

Machine shop equipment, methods and pro-  
cesses. E. R. Norris. Elec Ry J 46:626-7 S  
25 '15

Metal plate floor shop. J. J. Turteltaub. II Iron  
Age 95:239 Ja 28 '15

Modern sheet metal machinery plant. II plans  
Metal Work 83:127-9 Ja 15 '15

**Machine shops—Continued**

- New England machine tool plant. E. C. Kreutzberg. 11 plan Iron Tr R 56:1265-9 Je 17 '15
- One-story machine shop at Norfolk Downs, Mass.—designed for two additional stories. 11 plan Concrete Cem 6:269-60 My '15
- Putnam machine company's plant, Fitchburg, Mass.; with diagram of layout. 11 Iron Age 96:292-5 Ag 5 '15
- Shops for repair purposes at Gary. 11 plan Iron Tr R 56:277-81+ F 4 '15
- Snapshots on the road. Mach 21:490-1 F '15
- See also* Bridge shops; Electric railroads—Shops; Locomotive shops; Machine shop management; Machine shop practice; Railroads—Shops; Repair shops; Waste removal
- Safety devices and measures**
- Ford methods and the Ford shops. F. L. Faurote. 11 Eng M 49:372-93 Je '15
- Glass chip guard and box. J. E. Cooley. diags Iron Age 95:1123 My 20 '15
- Safety first; Railway tool foremen's association discussion. 11 Ry Age (Mech ed) 89:412-13 Ag '15
- Safety organization of a machine shop. L. D. Burlingame. 11 Mach 22:203-9 N '15
- Sterilizing cutting oils. P. J. Artale. Iron Age 95:482 F 25 '15
- Workmen's co-operation reduces accidents. 11 Iron Age 95:1051-4 My 13 '15
- See also* Machinery—Safety devices
- Machine tool builders' association, National.**  
*See* National machine tool builders' association
- Machine tool industry**
- Chinese machine shop of today. F. A. Foster. Iron Tr R 57:992+ N 18 '15
- Credit problems of tool builders. Iron Tr R 56:847 Ap 1 '15
- Hints on selling machine tools. Mach 21:367-8 Ja '15
- How to demonstrate machine tools. A. A. Dowd. 11 diag Iron Tr R 57:17-21 J1 '15
- How to use the sales engineer. A. A. Dowd. 11 diags Iron Tr R 56:459-63+, 667-72, 927-30+ Mr 4, Ap 1, My 6 '15
- Machine-tool builders' spring meeting. Iron Age 95:1173-8 My 27 '15
- Machine-tool contracts; confirmed credits and payments against inland shipping documents desired. Iron Age 95:741 Ap 1 '15
- Machine tool exports. Iron Age 96:198 J1 22 '15
- National machine tool builders' association annual convention, New York, Oct. 28-29. Iron Age 96:1060-3+ N 4 '15
- National supply and machinery dealers' association meeting, New York, Oct. 28. Iron Age 96:1101-2 N 4 '15
- National supply and machinery dealers' association meeting, New York, Oct. 28. Iron Tr R 57:908-9 N 4 '15
- Railways buy shop equipment. Iron Tr R 56:249-51 F 4 '15
- Selling machine tools abroad. Iron Tr R 56:466-8 Mr 4 '15
- Solving some war order problems. E. C. Kreutzberg. 11 Iron Tr R 57:433-6+ S 2 '15
- South American markets for machine tools. B. O. Hough. Mach 21:545-6 Mr '15
- Speeding up manufacture of machine tools. Iron Age 96:405-7 Ag 19 '15
- Machine tools**
- Adjustable and multi-cutting turning tools. A. A. Dowd. diags Mach 21:825-6 Je '15
- Adjustable and multi-cutting turning tools. F. H. Mayoh. diags Mach 21:802-3 D '14
- American railway tool foremen's association 7th annual convention. Ry R 57:115-17 J1 24 '15
- Automatic electrical tools. 11 Mach 22:245-6 N '15
- Automatic machine development. R. E. Flanders. 11 Iron Tr R 57:885-93+ N 4 '15
- Bullard multitool machines Ford flywheel in 1 min. 44 sec. 11 Automobile 33:666 O 7 '15
- Conradson hydraulically operated, six-spindle, vertical, automatic chucking, boring and turning machine. 11 Iron Tr R 56:920-2 My 6 '15
- Don'ts for tool designers. E. J. Utz. Mach 22:43 S '15
- Electric power in the machine shop. A. L. De Leeuw. Iron Tr R 57:888-90+ O 7 '15
- Electrical appliances for workshops. 11 Engineer 119:474-6, 546-9 My 14, Je 4 '15
- 53-in. boring and turning mill. 11 Iron Age 96:461 Ag 26 '15; Iron Tr R 57:441+ S 2 '15
- Ford methods and the Ford shops. F. L. Faurote. 11 diags Eng M 49:384-201 My '15
- High speed steel tipped tools. J. W. Pike. 11 Ry Age (Mech ed) 89:590 N '15
- How machine tools and appliances are sized. F. Horner. Mach 21:487-9 F '15
- Improved method of facing and counterboring. O. A. Webster. diag Mach 21:409 Ja '15
- Machine tool development discussed by mechanical engineers. Iron Tr R 56:879 Ap 29 '15
- Machine-tool developments of 1914; abstract. L. P. Alford. Am Soc M E J 37:414-15 J1 '15
- Machine tool equipment of the new locomotive repair shops, Chicago & Alton R. R., Bloomington, Ill. plans Ry R 56:793-82 Ja 16 '15
- Machine-tool performance diagnosis: lessons of the power-time characteristic and value of automatic records on analyzing productive operations. Elec W 56:417-18 F '15
- Machinery for the production of projectiles. 11 diags Engineer 119:572-3, 599-602, 634-5; 120-3, 116-17, 278, 338-9 Je 11-J1 2, 30, S 17, O 8 '15
- Machines for making projectiles. 11 Iron Tr R 56:383-4+ F 18 '15
- Machines for Warner gear making. 11 Automobile 33:1129 Je 24 '15
- Machining irregular contours. A. A. Dowd. diags Mach 21:536-43 Mr '15
- Machining shrapnel shells. D. T. Hamilton. 11 Mach 21:819-39 Ap '15; Same abr. Sci Am S 80:12-13 J1 3 '15
- Making aero motor pistons: tool equipment used on Cleveland automatics. D. T. Hamilton. 11 diags Mach 21:300-2 D '14
- Making cartridge cases. D. T. Hamilton. 11 diags Mach 21:651-6 F '15; Excerpt. Sci Am S 80:29-30 J1 10 '15
- Making fuse parts. 11 diags Mach 21:641-50 Ap '15
- Making vertical forming tools: practice of the Windsor machine co. C. F. Schlegel. 11 diags Mach 21:265-71 D '14
- Manufacture of chain. F. H. Mayoh. 11 diags Mach 21:719-23 My '15
- Power formulas for machine tools. A. D. DuBois. Elec W 56:928-33 Ap 10 '15
- Progress in machine shop methods. E. R. Norris. 11 Iron Tr R 57:679-82+, 747-50 O 7-14 '15
- Quadruple tool for planing shoes and wedges. E. A. Murray. 11 diags Ry Age (Mech ed) 89:584 N '15
- Shall we use wide or narrow guides? S. C. Bliss. diag Mach 22:147 O '15
- Special jigs for locomotive repair shops. 11 diags Ry Age (Mech ed) 89:409-12 Ag '15
- Three projectile machines. 11 Iron Age 95:402-3 F 18 '15
- Tools for making a double-pronged rivet. 11 diags Mach 21:299 D '14
- Value of specialization in factory. A. A. Dowd. 11 diags Iron Tr R 57:259-83 Ag 5 '15
- See also* Abrasives; Bending machines; Centering machines; Chucks; Cutting machines; Drilling and boring machinery; Electric driving; Grinding and polishing; Grinding machines; Hobbing; Lathes; Machine shop practice; Milling machines; Planing machines; Pneumatic tools; Punching machinery; Reamers; Screw machines; Shears; Tapping machines; Thread cutting machines; Tool steel; Wire-working machinery; Woodworking machinery
- Depreciation**
- Depreciation of machine tools: abstract. Ind Eng 14:409 O '14
- See also* Machinery—Valuation
- Failures**
- Cause of high speed steel tool failures. G. J. Brunelle. Ry Age (Mech ed) 89:369-70 J1 '15

## Machine tools—Continued

## Fixtures

- Adjustable wedge stop in jig and fixture design. R. E. McCoy. *diags Mach* 21:895-9 JI '15
- Assembling fixture for Franklin front and rear axles. *Il Mach* 21:577 Mr '15
- Attachment for drilling small pieces. *Il Iron Age* 95:669 Mr 25 '15
- Clamping devices for jigs and fixtures. S. Helweg. *diags Mach* 21:578-9 Mr '15
- Compensating and quick-acting clamping devices. A. A. Dowd. *diags Mach* 21:355-9 Ja '15
- Drill fixtures for motor truck parts. C. T. Schaefer. *diags Horseless Age* 34:813-19 D 2 '14
- Economical fixture design. A. B. Babbitt. *diags Mach* 22:145-6 O '15
- Fixture for grinding threading tool cutters. C. Grilley. *diags Mach* 22:53 S '15
- Fixture for machining moving-picture machine cross-pins. H. G. Thayer. *diags Mach* 21:922-3 JI '15
- Fixtures for continuous milling. A. B. Bachmann. *Il diags Mach* 21:351-4 Ja '15
- Floating principle as applied to fixture work. A. A. Dowd. *diags Mach* 21:701-7 My '15
- General utility vise for drill presses. *Il Ry Age (Mech ed)* 89:255-6 My '15
- Index drilling and tapping attachment for Brown & Sharpe automatic screw machine. W. F. Graddolph. *Il diags Mach* 21:289-90 D '14
- Interchangeable locating and clamping accessories. *Il diags Mach* 21:727-8 My '15
- Jig and fixture design. *diags Mach* 21:580-1 Mr '15
- Jig and fixture mechanisms. G. M. Meyncke. *diags Mach* 21:970-4 Ag '15
- Milling fixture with a knock-out attachment. F. W. Barrows. *diags Mach* 21:410 Ja '15
- Multiple thread chasing fixture. R. C. MacLachlan. *diags Mach* 22:233 N '15
- Providing for up-keep in designing jigs and fixtures. A. A. Dowd. *diags Mach* 22:12-15 S '15
- Safety first; its application to the design of machine fixtures. A. A. Dowd. *diags Eng M* 49:679-89 Ag '15
- Square-end milling fixture. O. A. Webster. *Il diags Mach* 21:1009 Ag '15
- Three adaptable milling fixtures. C. F. Meyer. *Il diags Mach* 21:962-5 Ag '15

See also Indexing fixtures; Mandrels

## History

- Machines with which machines are made; a brief history. *Il Sci Am* 112:538-9 Je 5 '15

## Manufacture

- Illinois Central tool system; standardization and distribution include a central tool room with an accurate cost system. O. D. Kinsey. *Il Ry Age (Mech ed)* 89:361-4 JI '15
- Interchangeability. J. P. Brophy. *Mach* 21:967-8 Ag '15

## Repair

- Handling of repair work in the factory. A. A. Dowd. *Iron Age* 95:994-5 My 6 '15
- Machine unit system. See Machine expense
- Machine work

## Cost

- Effect of design on the cost of machining. A. A. Dowd. *diags Mach* 21:273-7 D '14

## Machinery

- Efficiency in the purchase of machinery. E. C. Stueler and W. C. Nisbet. *Ind Eng* 14:337-8 Ag '14; Same. *Mach* 21:549 Mr '15
- Heavy machinery used in building automobiles. *Sci Am S* 80:279 O 30 '15
- How to reduce machine friction. N. G. Near. *Metal Ind n s* 13:409 O '15
- Recent legal decisions involving machinery. *Mach* 21:979; 22:27 Ag-S '15
- Thinking machine, planning and theories. S. B. Russell. *Il Sci Am* 115:246+ S 13 '15
- Watching distant machines from a desk. H. T. Wade. *Il Sci Am* 112:161-2 F 18 '15

See also Agricultural machinery; Bearings; Belting; Bookbinding machinery;

Brakes; Calculating machines; Casting machines; Cement machinery; Conveying machinery; Cranes, derricks, etc.; Crank-pins; Crankshafts; Crushing machinery; Cylinders; Drilling and boring machinery; Dyeing machines; Electric engineering; Electric machinery; Engineering; Engines; Engraving machines; Excavating machinery; Fans, Mechanical; Fitting (machinery); Forging machinery; Foundry machinery; Friction; Gearing; Grinding machines; Hoisting machinery; Hydraulic machinery; Joints; Keyseating machines; Knitting machinery; Lathes; Locomotives; Looms; Lubrication and lubricants; Machine shop practice; Machine tools; Metal working machinery; Milling machines; Mining machinery; Nameplates; Paving machinery; Planing machines; Power transmission; Printing machinery; Printing presses; Pulleys; Pumping engines; Pumps; Refrigeration and refrigerating machinery; Road making machinery; Screw machines; Shafting; Shafts; Shovel machines; Steam engines; Testing machines; Textile machinery; Thread cutting machines; Turbines; Type-setting machines; Valves; Water wheels; Windmills; Wire-working machinery; Wood-working machinery; Woolen and worsted machinery

## Design

- Adjustable wedge stop in jig and fixture design. R. E. McCoy. *diags Mach* 21:895-9 JI '15
- Aids to designing; proportioning the machine to the size of the man. *diags Sci Am S* 80:292-3 N 6 '15
- Don'ts for tool designers. E. J. Utz. *Mach* 22:43 S '15
- Effect of design on the cost of machining. A. A. Dowd. *diags Mach* 21:273-7 D '14
- Floating principle as applied to fixture work. A. A. Dowd. *diags Mach* 21:701-7 My '15
- Machine design in a Rhode Island school. W. E. Freeland. *Il diags Iron Age* 96:1105-7 N 11 '15
- Plotting the involute curve. J. Edgar. *diags Mach* 21:480-2 F '15
- Sectional views of ribs and symmetrical parts. C. L. Svensen. *diags Mach* 21:790-1 Je '15
- Use of continued fractions in mechanical problems. W. W. Johnson. *Il diag Mach* 21:802-4 Je '15

See also Ball bearings; Bearings; Belting; Bolts and nuts; Cams; Clutches; Drafting room practice; Gearing; Machine shop practice

## Exhibitions

- Manufacturers' exhibits at the Panama-Pacific exposition. *Elec W* 65:833-6 Mr 27 '15
- Mechanical engineering at the Panama-Pacific international exposition. G. W. Dickie. *Il Am Soc M E J* 37:592-600 O '15
- Outline of exhibits of products of mechanical engineering at the Worlds' fair at San Francisco. *Il Iron Age* 96:142-9 JI 15 '15
- Panama-Pacific international exposition. *Il Power* 41:250-6 F 23 '15

## Fitting

See Fitting (machinery)

## Foundations

- Anchoring foundation bolts in concrete. T. Croft. *diag Power* 41:841 Je 22 '15
- Concrete engine foundations. H. C. Campbell. *Elec W* 66:865 O 16 '15
- Concrete filling for engine beds and machine frames. F. W. Salmon. *Il Power* 41:94 Ja 19 '15
- Concrete foundations for farm engines. Concrete Cem 7:184 N '15
- Constructing foundations for electrical machinery. N. G. Meade. *diag Power* 42:439 S 28 '15
- Foundations for jar-ramming molding machines. E. S. Carman. *Il diags Foundry* 43:420-3 O '15; Same. *Iron Tr R* 57:1180-3 D 16 '15
- Installing rolling-mill anchor bolts. A. Connely. *diags Iron Age* 96:296-7 Ag 5 '15

**Machinery—Continued****Manufacture**

Shop system of the American machine & foundry co. E: K. Hammond. *diags Mach* 21:448-50 F '15

**Safety devices**

Gear guard for lathes. S. K. Eastwood. *diag Iron Age* 95:948 Ap 29 '15  
Grinding safety devices. C: G. Smith. *Iron Age* 94:1392 D 17 '14  
Guarding of shafting. *Il Ry R* 56:220-1 F 13 '15  
Safety feed increases production of punch press. *Il Iron Age* 95:1333-4 Je 17 '15  
Safety first; its application to the design of machine fixtures. A. A. Dowd. *diags Eng M* 49:679-89 Ag '15

See also Cranes, derricks, etc.—Safety devices; Grinding machines—Safety devices; Machine shops—Safety devices and measures; Saws—Safety devices

**Testing**

Power plant testing. W. M. Selvey. *diags Engineer* 118:555-6 D 11 '14

**Valuation**

Valuation of machine tools. G: L. Colburn. *Mach* 21:708-9 My '15

**Machinery, Automatic**

Automatic machine development. R. E. Flan-dera. *Il Iron Tr R* 57:885-93+ N 4 '15; Abstract. *Iron Age* 96:1179 N 18 '15  
Torres and his remarkable automatic devices. *Il diags Sci Am S* 80:296-8 N 6 '15.

**Machinery Industry**

Comparison card for cost departments. H. A. Russell. *Iron Tr R* 57:793 O 21 '15  
Engineering openings in Russia. *Sci Am* 119:331 Ap 3 '15  
How to sell tools to the government. L. W. Moffett. *Il Iron Tr R* 56:1101-5 Je 3 '15  
Huge iron, steel and machinery exports. *Iron Age* 95:883 O 14 '15  
Machinery exhibitors at the Panama-Pacific international exposition. *Iron Age* 95:654-5 Mr 18 '15  
Machinery markets, 1914. *Iron Age* 95:124-30 Ja 7 '15  
Machinery trade with South America. J. A. Massel. *Iron Age* 96:1128-9 N 11 '15  
Manufacturers' instruction cards helpful. F. W. Fisher. *Power* 42:418 S 21 '15  
Openings for American machinery. J. A. Massel. *Iron Tr R* 57:707 O 7 '15  
War rescues machinery market. *Iron Tr R* 56:104+ Ja 7 '15

See also Bookbinding machinery

**Machines. See Machinery**

Machines, Centrifugal. See Centrifugal machines

**Machining. See Machine work****Machinists**

Employment of women as machinists. *Il Engineer* 120:218 S 3 '15

**Machinists' tools**

Group of machinists' fine tools. *Il Iron Age* 95:1011 My 6 '15

**McKeesport, Pennsylvania****Water supply**

Six years of softened and purified water at McKeesport, Pa. E: C. Trax. *Eng & Contr* 44:127-8 Ag 25 '15

**McKim, Charles Follen, 1847-1909**

Personal reminiscences of Charles Follen McKim. G. Brown. *por Arch Rec* 38:575-82, 681-9 N-D '15

**McMurty, George Gibson, 1838-1915**

Founder of Vandergrift, dies at Atlantic City. *por Iron Tr R* 57:303 Ag 12 '15

Sketch. R. A. Walker. *por Iron Age* 96:366-7 Ag 12 '15

**Macon, Georgia****Streets**

Methods and costs of constructing the Bay street underpass at Macon, Ga. C. H. Fuller. *Il diags Concrete Cem* 6:75-8 F '15

**Madras, India****Water supply**

New waterworks at Madras. *Il diags map Engineer* 119:58-9, 78-81 Ja 15-22 '15

**Magic squares**

Magic squares. W. G. Swart. *Sci Am S* 78:406 D 26 '14

**Magnallum**

Reclamation of magnallum from turnings. J: Coulson. *Metal Ind n s* 13:455-7 N '15; Abstract. *Am Soc M E J* 37:655-6 N '15

**Magnesite**

Effect of steam upon magnesite brick or calcined magnesite. R. H. Youngman. *J Ind & Eng Chem* 6:1037 D '14

Magnesia cement. C. H. B. Burlin. *Engineer* 119:471-2 My 14 '15

Occurrence, preparation and use of magnesite. L. C. Morgan. *Il Am Inst Min E Bul* 93:2345-52 S '14; Same cond. *Iron Tr R* 55:823 O 29 '14; Summary. *Iron Age* 94:83 O 15 '14; Discussion. *Am Inst Min E Bul* 100:865-7 Ap '15

**Magnesium carbonate**

Solubility of magnesium carbonate in natural waters. R. C. Wells. *Am Chem Soc J* 87:1704-7 J1 '15

Solubility-product constant of calcium and magnesium carbonates. J: Johnston. *Am Chem Soc J* 37:2001-20 S '15

**Magnesium chloride**

Sulfate method for standardizing a magnesium salt solution. C. W. Foulk and O. R. Sweeney. *diags Am Chem Soc J* 36:2360-72 N '14

**Magnesium silicate**

Comparison of silicates and carbonates as sources of lime and magnesia for plants. W. H. MacIntire and L. G. Willis. *Il J Ind & Eng Chem* 6:1005-8 D '14

**Magnesium sub-oxide**

Electrolytic preparation of magnesium. F. C. Frary and H. C. Berman. *Met & Chem Eng* 13:324 My '15

Magnetic chucks. See Chucks, Magnetic

**Magnetic induction**

Temperature coefficient of magnetic permeability within the working range. R. L. Sanford. *U S Bur Stand Bul* 12:1-10 O 28 '15; Excerpts. *Sci Am S* 79:283 My 1 '15

**Magnetic measurements**

Decomposing magnetic fields into their higher harmonics. H. Weichsel. *Am Inst E E Pro* 34:2437-54 O '15

Experiments with a plunger electromagnet; determining the pull on the plunger when it is in motion. B. C. Batcheller. *diag Elec W* 65:1037-9 Ap 24 '15

Koepsel permeameter. C: W. Burrows. *Il diags U S Bur Stand Bul* 11:101-30 N 15 '14; Abstract. *Elec W* 65:95-6 Ja 9 '15; Summary. *Sci Am S* 79:197 Mr 27 '15

Reluctance of some irregular magnetic fields. J: F. H. Douglas. *diags Am Inst E E Pro* 34:867-925 My '15; Discussion. 34:3078-86 D '15

Unsymmetrical hysteresis loop. J: D. Ball. *Am Inst E E Pro* 34:2275-97 O '15

See also Magnetic induction

**Magnetic separation of ores**

Electromagnetic ore separation. I. C. Clark. *diags Eng & Min J* 99:533-8 Mr 20 '15

Electromagnetic zinc-ore treatment by the Campbell process. L. E. Ives. *Il diags Eng & Min J* 99:979-80 Je 5 '15

Magnetic separation of zinc-iron sulphide ores. *Il Met & Chem Eng* 13:573 S 1 '15

New magnetic iron-ore separator. *diag Iron Age* 96:577 S 9 '15

**Magnetic separators**

Dings magnetic separator. *Il Metal Ind n s* 13:475 N '15

Electrical appliances for workshops. *Il Engineer* 119:570 Je 11 '15

Portable magnetic separator outfit. *Il Elec R & W Elec'n* 87:441 S 4 '15; *Met & Chem Eng* 13:770 O 15 '15

**Magnetic surveying**

Magnetic survey of the globe. *Sci Am* 113:244 S 18 '15

**Magnetic surveying—Continued**

What the dip needle can and cannot do. C. A. Cheney, Jr. Eng & Min J 100:193-4 J1 81 '15  
 What the dip needle can and cannot do. W. O. Hotchkiss. Eng & Min J 100:363 Ag 28 '15

**Magnetic testing**

Iron-cobalt alloy,  $\text{Fe}_2\text{CO}$ , and its magnetic properties. T. D. Yensen. Il Gen Elec R 18: 881-7 S '15

**Magnetic transmission. See Automobiles—Transmission****Magnetism**

Application of the electron theory to various phenomena. J. P. Minton. Gen Elec R 18:287-9 Ap '15

Effect of chemical composition upon the magnetic properties of steels. W. E. Ruder. Gen Elec R 18:197-203 Mr '15

Magnetic and other properties of electrolytic iron melted in vacuo. T. D. Yensen. pl Am Inst E E Pro 34:237-61 F '15

Magnetic properties of some iron alloys melted in vacuo. T. D. Yensen. Il diag Am Inst E E Pro 34:245-95 O '15

Magnetic studies of mechanical deformation in certain ferromagnetic metals and alloys. H. Hanemann and P. D. Merica. Il Am Inst Min E Bul 108:2371-85 D '15

Modern theories of magnetism. G. F. Stradling. J Fr Inst 180:173-98 Ag '15

See also Electricity; Electromagnets; Hysteresis; Magnetic measurements; Magnetic separation of ores; Magnetization

**Magnetism, Solar**

Flammarion talks on the sun. Sci Am 112:146-8 F 6 '15

**Magnetization**

Magnetic behaviour of iron under alternating magnetization of sinusoidal wave-form. N. W. McLachlan. diags Inst E E J 53:809-19 Je 15 '15

Magnetization by rotation. S. J. Barnett. Sci Am S 80:201 S 25 '15

Magnetization curves. J. D. Ball. Gen Elec R 18:31-5 Ja '15

Magnetization of iron at high flux density with alternating currents. J. S. Nicholson. Inst E E J 53:248-57; Discussion. 53:257-63 F 1 '15

Representation of the total losses in iron, due to alternating magnetization, by an expression of the form  $W = cB^n$ . N. W. McLachlan. Inst E E J 53:350-5 Mr 1 '15

**Magnetos**

British magneto. Engineer 119:140 F 5 '15

Combined battery and magneto systems. P. M. Heldt. diags Horseless Age 35:312-15 Mr 3 '15

Eisemann brings out magneto for sixes. Il Automobile 32:467 Mr 11 '15

Eisemann flexible magneto coupling. Il Automobile 32:335 F 18 '15

Founding magneto industry in France. Automobile 32:51-2+ J1 8 '15

Gear-driven Bosch magneto for Ford. Il Automobile 31:1264 D 31 '14

High tension magneto. P. M. Heldt. diags Horseless Age 35:210-12 F 10 '15

High-tension magneto with automatic control. C. J. Morrison. Automobile 32:21 Ja 7 '15

Magneto and coil ignition. P. M. Heldt. diags Horseless Age 35:178-81 F 3 '15

Magneto generator. P. M. Heldt. diags Horseless Age 34:822-3 D 3 '14

Magneto spark vs. battery coil spark. D. H. Cunningham. Automobile 31:1020-3 D 3 '14

Magneto vs. battery coil—from automobile drivers' viewpoint. C. S. Manierre. Automobile 32:20-1 Ja 7 '15

Magnetos for 1915. Il diags Automobile 32: 150-6 Ja 21 '15

Questions on Ford magneto. Automobile 31: 1116 D 17 '14

Recharging magneto magnets. R. J. Everest. Il Automobile 32:414-15 Mr 4 '15

Spark-plug ignition systems. A. H. Israel. diags Power 41:258-60 F 23 '15

Spark timing methods. P. M. Heldt. Il diags Horseless Age 35:274-7 F 24 '15

Special types of magnetos—care and adjustment. P. M. Heldt. diags Horseless Age 35: 246-9 F 17 '15

Splitdorf announces twelve-cylinder magneto. Il diags Automobile 32:19-21 J1 1 '15

Storage battery charging—magnet recharging. P. M. Heldt. Il diags Horseless Age 35:445-6 Mr 31 '15

Wiring diagram for Remy magneto. diag Horseless Age 35:339 Mr 10 '15

**Manufacture**

Eisemann's train-dispatcher system. J. E. Schipper. Il plans Automobile 32:580-5 Ap 1 '15

Mahan, Alfred Thayer, 1840-1914

Admiral Mahan. Sci Am 111:486 D 12 '14

**Mail handling**

C. & A. R. adopts automatic mail exchange. Il Eng N 74:689-70 S 30 '15

Expansion of electric-vehicle business in Boston; mail delivery. Il Elec R & W Elec'n 67:277-8 Ag 14 '15

Hupp automatic mail exchange system. Il diags Ry R 57:436-40 O 2 '15

Mechanical equipment of the Grand Central post office. H. T. Wade. Il Sci Am 113:232-3 S 11 '15

Opportunity for electric vehicles in mail service. Elec W 65:566-7 F 27 '15

Telegraph traffic and power plant for pneumatic tubes in post offices; abstract. A. B. Bason. Am Soc M E J 37:418-19 J1 '15

**Mail order business**

Kansas City building of Montgomery Ward & co. Il plan Arch & Bldg 47:35-40 Ja '15

**Maine master plumbers' association**

Convention in Augusta, Me., on February 9th. Dom Eng 70:244-5 F 20 '15

**Maintenance of way master painters' association**

Abstract of papers and discussions presented at the meeting held November 17-19, 1914, at Detroit, Mich. Ry Age 57:1137-41 D 18 '14

12th annual convention, St. Louis, Oct. 19-21. Ry Age 59:968-9 N 19 '15

**Make-ready. See Printing, Practical—Press-work****Make-up (printing). See Printing, Practical—Imposition, etc.****Malaria**

Malaria and the transmission of diseases. R. Ross. Sci Am S 79:50-1 Ja 23 '15

**Malleable castings. See Iron founding****Malleable iron. See Cast iron****Malt**

Acid ratio: a new method for determining the proteolytic strength of germinated grain in technical analysis. C. A. Nowak. J Ind & Eng Chem 7:858-9 O '15

**Malt amylase**

Comparison of certain properties of pancreatic and malt amylase preparations. H. C. Sherman and M. D. Schlesinger. Am Chem Soc J 37:1305-19 My '15

Further experiments upon the purification of malt amylase. H. C. Sherman and M. D. Schlesinger. Am Chem Soc J 37:643-8 Mr '15

Influence of certain acids and salts upon the activity of malt amylase. H. C. Sherman and A. W. Thomas. Am Chem Soc J 37: 623-43 Mr '15

**Malting plants**

Electricity in malting houses; relative merits of isolated-plant and central-station service. Il Elec R & W Elec'n 65:1123-8 D 12 '14

**Maltose**

Structure of maltose and its oxidation products with alkaline peroxide of hydrogen. W. L. Lewis and S. A. Buckborough. Am Chem Soc J 36:2385-97 N '14

**Maltose octacetate**

Isomeric alpha and beta octacetates of maltose and of cellose. C. S. Hudson and J. M. Johnson. Am Chem Soc J 37:1276-80 My '15

**Man**

Man's development illustrated at San Diego; busts depict the earliest known human beings. A. H. Wright. Il Sci Am S 80:332 N 20 '15

**Man, Prehistoric**

Mankind in the making. W. P. Fycraft. Il Sci Am 112:100-1 Ja 30 '15

**Man, Prehistoric—Continued**

Prehistoric man and his early efforts to combat disease. T. W. Farry. *II Sci Am S* 78:365-6 D 5 '14

**Management.** See **Factory management**; **Foundry management**; **Machine shop management**; **Mine management**; **Office management**; **Railroads—Management**; **Scientific management**; **Shop management**

**Mandrels**

Air-operated chucks and mandrels. E. F. Lake. *II diag Mach* 21:476-9 F '15  
Mandrels for turning parallel surfaces. A. E. Blofield. *II Mach* 21:340 D '14

**Manganese**

Analod method for the determination of manganese in steel, iron ore and slag. Met & Chem Eng 12:793-4 D '14  
Determination of manganese in ferrovandium. W. W. Clark. Met & Chem Eng 13:155-6 Mr '15  
Manganese flour as surface hardener. Foundry 42:490 D '14  
Manganese-ore supplies. Eng & Min J 100:513 S 25 '15  
Occurrence and significance of manganese in the seed coat of various seeds. J. S. McHargue. Am Chem Soc J 36:2532-6 D '14  
Supply of manganese ore and ferro-manganese statistics. Met & Chem Eng 13:575 S 1 '15  
War affects the manganese industry. Eng & Min J 100:195 JI 31 '15  
War upsets manganese ore industry. Iron Tr R 57:485-+ S 9 '15

**Manganese bronze.** See **Bronze**

**Manganese chloride**

Mixed crystals of ammonium chloride with manganese chloride. H. W. Foote and B. Saxton. Am Chem Soc J 36:1695-1704 Ag '14

**Manganese dioxide**

New method of preparation and some interesting transformations of colloidal manganese dioxide. E. J. Witzemann. Am Chem Soc J 37:1079-81 My '15

**Manganese steel**

Are the deformation lines in manganese steel twins or slip bands? H. M. Howe and A. G. Levy. 4 pls Am Inst Min E Bul 99:587-600; 108:1487-8 Mr, JI '15

Composition, uses, and manufacture. J. H. Hall. *diag J Ind & Eng Chem* 7:94-3 F '15; Same cond. Foundry 43:138-9 Ap '15

Designing manganese steel track work. V. Angerer. Ry Age 59:341-2 Ag 20 '15

Improved manganese steel. Mach 21:450 F '15

Manganese steel and the allotropic theory. A. Sauveur. *II Am Inst Min E Bul* 93:2438-49 S '14; Abstract. Iron Tr R 55:1002 N 26 '14; Discussion. Am Inst Min E Bul 100:787-90 Ap '15

Manganese-steel castings in the mining industry. W. S. McKee. *II diag Am Inst Min E Bul* 108:2399-2411 D '15; Same. Iron Tr R 57:1077-81 D 2 '15

Manganese-steel rails. R. Hadfield. *II Engineer* 118:564 D 11 '14

Manganese steel special work. Elec Ry J 45:576-8 Mr 20 '15

Manganese steel track-work specifications. Elec Ry J 45:1118 Je 12 '15

Recent manganese steel crossings. C. L. Hawkins; E. P. Roundey. Elec Ry J 45:892 My 8 '15

Solid manganese steel crossings in Chicago. *II diag Elec Ry J* 45:711-12 Ap 10 '15

Steel mill castings: use of manganese steel in heavy rolling mill equipment. G. Tripp. *II Iron Tr R* 56:49-53 Ja 7 '15

**Mangers**

Construction of sanitary mangers in dairy barn at Troy, Pa. *II diag Concrete Cem* 6:104-6 F '15

**Manholes**

Drains for manholes. *diag Elec W* 66:304 Ag 7 '15

Tile manholes for sewage plants. H. S. McGee. *diag Eng Rec* 72:55 JI 10 '15

Wiring and conduit work at the Panama-Pacific exposition. A. A. Willoughby. *II diag Elec R & W Elec'n* 67:365-8 Ag 28 '15

**Manila, Philippine Islands****Rapid transit**

Manila company submits service brief. Elec Ry J 46:672-3 O 2 '15  
Traffic count in Manila. Elec Ry J 46:395 S 4 '15

**Manila rope**

Manila rope fastenings. *II Eng Rec* 70:706 D 26 '14; Abstract. *Ind Eng* 15:23-9 Ja '15  
Manila rope in railway service. F. E. Weise. Ry Age 59:753-9 O 22 '15

**Mannose pentacetates**

Isomeric pentacetates of mannose. C. S. Hudson and J. K. Dale. Am Chem Soc J 37:1280-2 My '15

**Manometers**

Measuring high vacuums; abstract. J. W. Woodrow. *diag Elec W* 65:36-7 Ja 2 '15  
Studies of the vapor pressure of solutions; a static method for the determination of the difference between the vapor pressure of solution and that of solvent. J. C. W. Frazer and B. F. Lovelace. *diag Am Chem Soc J* 36:2439-49 D '14  
Will Quizz, jr. *II Power* 40:345-6 D 15 '14

**Mansfield, Ohio****Sanitary affairs**

Proposed method of enclosing a stream in reinforced concrete conduit. C. L. Bushey. *diag Eng & Contr* 43:126-7 F 10 '15

**Mantels**

Concrete mantel made with pre-cast units. *II diag Concrete Cem* 6:138 Mr '15  
Detail of old mantel at Evergreen, Baltimore, Md.; measured drawings by Riggis Buckler. Brickb 24:37-8 F '15  
Mantel in Crownshield Devereux house; drawings. Brickb 34:pl 4, Ap '15

See also **Fireplaces**

**Mantles, Gas. See Gas mantles****Manual training**

See also **Trade schools**

**Manufacturers**

Liability of machinery manufacturers. A. L. H. Street. Iron Age 95:222-3 Ja 21 '15

**Manufacturers, National association of.** See **National association of manufacturers**

**Manufactures**

Census bureau no inquisition. Iron Age 95:823 Ap 8 '15

Fields of motor application. D. B. Rushmore. Am Inst E E Fro 34:1105-13 Je '15; Discussion. 34:3006-52 D '15

See also **Cars**; **Chemistry, Technical**; **Confectionery**; **Cost accounting**; **Cutlery**; **Factories**; **Gas manufacture**; **Leather**; **Machinery**; **Metals**; **Paper making and trade**; **Perfumery**; **Pottery**; **Prices**; **Scientific management**; **Soap**; **Steel industry**; **Textile industry and fabrics**; **Tubes**; **United States—Manufactures**; **Waste products**

**Cost**

Manufacturing expense distribution. N. T. Ficker. Eng M 49:321-6, 553-9, 862-71; 50:58-64, 264-61, 390-400 Je-JI, S-D '15

What constitutes overhead. E. H. Fish. Eng M 49:438-97 JI '15

**Manuscripts, Preparation of**

Preparation of copy. F. H. Teall. Inland Ptr 56:381-2 D '15

**Map drawing. See Topographical drawing****Maple**

Commercial uses of sugar maple. H. Maxwell. *II Am For* 21:1022-30 N '15

Sugar maple; identification and characteristics. S. B. Detwiler. *II Am For* 21:1019-23 N '15

**Maple sugar**

Maple sugar making. *II Am For* 21:1031-2 N '15

**Maps**

First complete official map of New York city. *II Eng Rec* 71:666-7 My 22 '15

Lettering land sections for federal valuation maps. L. M. MacArthur. Eng Rec 72:490 O 16 '15

**Maps—Continued**

- Lettering land sections for federal valuation maps. L. W. Duffee. Eng Rec 71:814 Je 28 '15
- Mammoth new map of the city of New York. Eng N 73:981-2 My 20 '15
- Maps and map making. T. H. Holdich. Sci Am S 79:88-9 Ja 18 '15
- New York city's twenty-five foot map. C. W. Person. 11 Sci Am 112:375 Ap 24 '15
- Outgrowths of letterpress; modern mapmaking. G. Sherman. 11 Inland Ptr 55:321-7 Je '15
- See also* Railroads—Maps; Relief maps; Road maps
- Maps, Railroad. *See* Railroad maps
- Marage, René, 1859-  
Photographing speech; some recent investigations by Dr. Marage. J. Boyer. 11 Sci Am 112:607-8 Je 19 '15
- Marble  
Electrical equipment of the Vermont marble company. J. Liston. 11 Gen Elec R 18:1015-25 N '15
- Electricity in marble quarrying. 11 Elec R & W Elec'n 67:963-6 N 27 '15
- Marcy ball mill  
Description. diag Eng & Min J 100:147 Ji 24 '15
- Margins (printing)  
Margins. J. L. Frazier. Inland Ptr 55:65-8 Ap '15
- Marine boilers. *See* Boilers, Marine
- Marine borers. *See* Borers (animals)
- Marine draftsmen, American society of. *See* American society of marine draftsmen
- Marine engineering  
Defects in installations of marine machinery and how they were remedied. S. Evasa. diags Int Marine Eng 20:507-9 N '15
- Latest developments in marine electrical engineering. H. A. Hornor. Int Marine Eng 20:201-3 My '15
- Marine engineering in 1914. Engineer 119:9, 11 Ja 1 '15
- Some hazardous experiences at sea. Int Marine Eng 20:271-3 Je '15
- See also* Boilers, Marine; Diesel engines, Marine; Diving, Submarine; Electricity on ships; Gas and oil engines, Marine; Marine engines; Naval architecture; Propellers; Ship propulsion; Shipbuilding; Steam turbines, Marine
- Study and teaching  
Questions and answers for marine engineers. *See* monthly numbers of International marine engineering
- Marine engines  
Interesting change in twin screw steamer. D. Sawyer. Int Marine Eng 20:176-8 Ap '15
- Lake passenger steamer Noronic. diags Int Marine Eng 20:431-5 O '15
- Relative advantages of turbines, Diesel engine and reciprocating steam engine drive. Int Marine Eng 20:223 My '15; Same. Sci Am S 80:86 Ag 7 '15
- Size of inboard bearings, proper design of crossheads and faults of lubricating systems. Int Marine Eng 19:566-7 D '14
- Small marine power plant. D. L. Roger. 11 Power 41:191 F 9 '15
- Submarine power plant. A. Hoar. 11 Sibley J 30:59-63 N '15
- Superheated steam in torpedo-boat engines. W. H. Miller. Sci Am 113:83-4 Ji 3 '15
- Thermodynamics of the marine engine: abstract. J. F. Wentworth. Int Marine Eng 20:17 Ja '15
- See also* Boilers, Marine; Diesel engines, Marine; Gas and oil engines, Marine; Marine engineering; Ship propulsion; Steam engines; Steam turbines, Marine
- Repair  
Handy kinks for the engineer. Int Marine Eng 20:133-4 Mr '15
- Valve-spring jams pump-piston. diag Int Marine Eng 20:40 Ja '15
- Marine terminals. *See* Terminals

**Maritime law**

- Freedom of the seas. Sci Am 113:392 N 6 '15
- Light on the seamen's bill. Sci Am 113:53 Ji 17 '15
- Market buildings  
Large market building at Worcester, Mass. 11 plans Brickb 24:191-2 Ag '15
- Pittsburgh's new market house. 11 Munic J 39:506 S 30 '15
- Plumbing system of public market station. 11 plan Metal Work 84:555-7 O 29 '15
- Markets, Municipal  
Baltimore's municipal markets; statistics. Munic J 39:659 O 28 '15
- Chattanooga's municipal markets. 11 Munic J 38:12-13 Ja 7 '15
- New public markets in New York. 11 plans Munic J 38:587-90 Ap 29 '15
- Portland's permanent market. H. M. White. 11 Munic J 39:508 S 30 '15
- Marquise (architecture)  
Marquise and its design. J. T. Fallon. 11 Arch Rec 33:555-61 N '15
- Mars  
Canals of Mars. W. H. Pickering. Sci Am 113:249 S 18 '15
- Martin, Pierre-Emile, 1824-1915  
Sketch. Sci Am S 79:407 Je 26 '15
- Martynia  
Composition of the seeds of martynia Louisiana. E. H. S. Bailey and W. S. Long. J Ind & Eng Chem 7:867-8 O '15
- Marx, Charles David, 1857-  
President of the Am. Soc. C. E. C. B. Wing. por Eng N 73:386- F 25 '15
- Marysville, Ohio  
Sewerage  
Sewage-treatment plant; screening, two-story sedimentation tanks, crushed-stone contact beds and intermittent sand filters. E. D. Barstow. Eng Rec 72:636-7 N 20 '15
- Masonic temples  
Masonic temple, Pittsburgh, Pa. 11 Arch & Bldg 47:289-94 Ag '15
- Masonry  
Dry masonry walls for highway embankments. 11 Eng Rec 70:887 D 26 '14
- Kensico dam construction in 1914. W. F. Smith. 11 plan Eng N 73:966-8 My 20 '15
- See also* Arches; Bricklaying; Bricks; Building; Concrete construction; Dams; Foundations; Plaster and plastering
- Mason's chutes  
Pattern for construction of mason's chute. diags Metal Work 83:921-2 Je 25 '15
- Massachusetts gas and electric light commission  
30th annual report. map Elec W 66:155 Ji 17 '15
- Massachusetts institute of technology  
Concrete dome for the new Technology buildings. 11 Eng N 74:385-6 Ag 26 '15
- Course which gives broad training in business and economics. Eng Rec 72:323-4 S 11 '15
- Design and construction of Massachusetts institute of technology buildings. S. E. Thompson. 11 diags plan Concrete Cem 7:14-19 Ji '15; Same. Eng & Contr 43:513-18 Je 9 '15; Same cond. Eng Rec 71:748-50 Je 12 '15
- New Technology laboratory plans announced. plans Eng N 74:340-1 Ag 13 '15
- Pile tests indicate type of substructure for Technology buildings. C. T. Main. 11 Eng Rec 72:325-8 Ag 21 '15
- Power-plant equipment. Elec R & W Elec'n 67:854 N 6 '15; Same. Power 42:752-3 N 30 '15
- Preparatory school and after. Eng Rec 71:191 F 13 '15
- Scientific aeronautic research. J. C. Hunsaker. 11 Sci Am S 79:364-5 Je 5 '15
- Massachusetts state association of master plumbers  
Annual convention, Boston, April 20. Dom Eng 71:133-5 My 1 '15
- Massage  
Massage in the after-treatment of the wounded. J. B. Mennell. Sci Am S 80:353 D 4 '15

- Master boiler makers' association**  
9th annual convention, Chicago, May 25-29.  
Ry Age 58:1129, 1165-9 My 28-Je 4 '15
- 9th annual meeting, Chicago, May 25-28. Ry Age (Mech ed) 89:309-17 Je '15**
- 9th annual convention, Chicago, May 25-28. Ry R 56:781-4 My 29 '15**
- Master car and locomotive painters' association**  
46th annual convention, Detroit, Mich., Sept. 14-16. Ry Age 59:565-8 S 24 '15
- 46th annual convention, Detroit, Mich., Sept. 14-16. Ry Age (Mech ed) 89:539-42 O '15**
- Master car builders' association**  
Committees. Ry R 57:502-3 O 16 '15
- 49th annual convention, Atlantic City, June 14-16. Elec Ry J 45:1183-4 Je 19 '15**
- 49th annual convention, Atlantic City, June 14. Ry R 56:832-42 Je 19 '15**
- President's address. D. F. Crawford. Ry R 56:827-8 Je 19 '15**
- Master mechanics' association, American railway. See American railway master mechanics' association**
- Master plumbers, National association of. See National association of master plumbers**
- Master steam and hot water fitters, National association of. See National association of master steam and hot water fitters**
- Mastication**  
**Mastication and food utilization. Sci Am S 80:823 N 20 '15**  
Utilization of ingested protein as influenced by undermastication and overmastication. L. F. Foster and P. B. Hawk. Am Chem Soc J 37:1347-61 My '15
- Mastodon**  
New mastodon. Sci Am S 80:259 O 23 '15
- Masts. See Towers, Steel**
- Mathematical instruments**  
*See also* Calculating machines; Slide rule
- Mathematics**  
**Astronomical and mathematical research. Prof. Schlesinger. Sci Am S 79:168 Mr 13 '15**
- Mathematical coincidences. A. J. Lotka. Sci Am 113:210 S 4 '15**
- Mathematical coincidences. M. Mott-Smith. Sci Am 113:379 O 30 '15**
- Moment of inertia of a rectangle by elementary method. W. H. Gravelle. Eng N 78:1078 Je 8 '15**
- Where the mathematician could aid the astronomer. F. Schlesinger. Sci Am S 80:31-2 Jl 10 '15**  
*See also* Arithmetic; Astronomy; Calculating machines; Mechanics; Mensuration; Metric system; Multiplication; Numbers; Numerals; Surveying
- Formulas**  
**Methods of approximate integration. W. Whited. Eng N 78:840-2 Ap 29 '15**
- Model experiments and the forms of empirical equations. E. Buckingham. Am Soc M E J 37:531-2; Discussion. 37:532-4 S '15**
- Matter. See Atomic theory; Atoms; Capillarity; Chemistry; Compressibility; Dissociation; Dynamics; Elasticity; Electrons; Force and energy; Ions; Physics; Radioactivity; Specific gravity**
- Mattresses (hydraulic engineering). See Rivers—Regulation**
- Mauna Loa**  
Notes from a volcano laboratory; personal documents in the case of Kilauea and Mauna Loa. T. A. Jaggar, jr. Il Sci Am S 80:214-17 O 2 '15
- Maxicator**  
Demand indicators; maxicator and printometer types. Il Munic J 38:906 Je 24 '15
- Maxim, Hudson, 1853—Sketch. por Eng M 50:201 N '15**
- Mazda lamp. See Electric lamps, Tungsten**
- Meadville, Pennsylvania**  
**Streets**  
Paving work in Meadville. B. F. Miller, jr. Munic J 37:804 D 3 '14
- Measurement. See Area measurement; Electric measurement; Gages; Gas measurement; Gas meters; Liquid meters; Measuring instruments; Mensuration; Meters; Micrometers; Pitot tube; Slide rule; Steam flow; Steam meters; Stream flow; Stream measurement; Surveying; Temperature—Measurement; Water flow; Water measurement; Water meters; Weights and measures**
- Measurement of distances in war. A. Keller. Il diags Sci Am S 79:324-5 My 22 '15**
- Measurements, Magnetic. See Magnetic measurements**
- Measures. See Weights and measures**
- Measuring instruments**  
**Fine measuring tools for machinists. Il Sci Am S 80:28 Jl 10 '15**  
*See also* Interferometer; Micrometers; Slide rule; Square (instrument)
- Meat**  
**Meat supply of the United States. Sci Am 112:183 F 20 '15**
- Mechanical draft**  
**Core-oven mechanical draft installation. Il diags Iron Age 96:1163-4 N 18 '15**
- Fan drafting as applied to locomotives. H. B. MacFarland. Il diags Ry Age 57:1119-22 D 18 '14; Same cond. Ry Age (Mech ed) 89:6-9 Ja '15; Abstract. Am Soc M E J 37:37-8 Ja '15; Abstract. Ry R 56:289-90 F 27 '15**
- Mechanical draft and smoke prevention. T. Tait. Dom Eng 73:232 N 20 '15**
- Mechanical draft and the évasé stack. A. M. de Bellis. diags Eng M 49:525-34 Jl '15**
- Notes on fans. A. A. Potter and S. L. Simmering. Power 41:816 Je 15 '15**  
*See also* Blower systems; Blowers; Fans, Mechanical
- Mechanical drawing**  
**Drafting room reforms. E. H. Fish. diags Eng M 48:752-5 F '15**
- Isometric drawings. D. A. Hampson. diags Power 41:785 Je 8 '15**
- Method of drawing an ellipse. A. W. Schoof. diags Mach 21:486-7 F '15**
- Suggestions for reading working drawings. F. West. Il diags Foundry 43:464-6 N '15**  
*See also* Architectural drawing; Drafting room practice; Drawing instruments; Geometrical drawing; Graphic statics; Perspective
- Mechanical engineering**  
**Mechanical engineering at the Panama-Pacific international exposition. G. W. Dickie. Il Am Soc M E J 37:592-600 O '15**
- Progress in the field of mechanical engineering during recent years. W. F. Durand. Am Soc M E J 37:viii-x O '15**  
*See also* Automobile engineering; Boilers; Electric engineering; Engineering; Engines; Friction; Hydraulic engineering; Joints; Locomotives; Lubrication and lubricants; Machine shop practice; Machine tools; Machinery; Marine engineering; Mechanical draft; Mechanics; Power plants; Power transmission; Steam engineering; Steam engines
- Mechanical engineers, American society of. See American society of mechanical engineers**
- Mechanical engineers, Institution of. See Institution of mechanical engineers**
- Mechanical handling**  
**Handling iron and cinder at the blast furnace. J. B. Johnson, jr. Il diags Met & Chem Eng 13:86-9 F '15**
- Handling materials in manufacturing plants. R. L. Streeter. Il diags Eng M 50:222-46, 401-23 N-D '15**
- Plant for handling scrap on the Boston & Albany. Il diags Ry Age 58:745-6 Ap 2 '15**
- Portable geared hand-power hoist. diags Eng N 74:864 O 28 '15; Eng & Min J 100:733 O 30 '15**
- Scrap-handling plant of Boston & Albany railroad. Il Eng Rec 70:651-2 D 12 '14**  
*See also* Ash handling; Blast furnaces—Charging; Coal handling; Concrete handling; Conveying machinery; Cotton handling; Cranes, derricks, etc.; Dumping appliances; Electric trucks in factories, freight terminals, etc.; Freight handling; Lifting magnets; Loading and unloading; Lumber handling; Mail handling; Ore handling; Rail handling; Slings and hitches; Trucks



- Mechanical movements**  
Excavating machine that walks. *Il diag Sci Am* 113:58 J1 17 '15  
Stop motion for moving picture machines. W. B. Morton. *diags Sci Am S* 79:396-7 Je 19 '15  
Suggestions in mechanisms; some curious geometric properties of articulated levers. S. D. Mott. *Sci Am S* 80:77 J1 31 '15
- Mechanical stokers.** See Stokers, Mechanical
- Mechanical theory of life**  
Is the organism a thermodynamic mechanism. J. Johnstone. *Sci Am S* 80:82-3, 106-7 Ag 7-14 '15
- Mechanics**  
Analogies between electricity and mechanics. W. S. Franklin. *Met & Chem Eng* 13:317 My '15  
Power required to stop an automobile. W. T. Francis. *Sci Am S* 78:406 D 26 '14  
See also Aeronautics; Deformations (mechanics); Dynamics; Elasticity; Engineering; Fluids; Force and energy; Friction; Gases; Graphic statics; Hydraulics; Load (mechanics); Machinery; Motion; Power; Pulleys; Steam engines; Strains and stresses
- Mechanics' liens**  
Right to lien for plans not used. A. L. H. Street. *Bldg Age* 37:57-8 Mr '15
- Mechanotherapy**  
Mechanics of convalescence; methods of hastening the cure of German wounded soldiers. W. Bannard. *Il Sci Am* 112:404 My 1 '15
- Mediation and conciliation.** Board of. See United States—Board of mediation and conciliation
- Medical examinations.** See Physical examinations
- Medical folk-lore**  
Curious cures. I. F. Hapgood. *Sci Am S* 80:331 N 20 '15
- Medical instruments and apparatus**  
Apparatus for mechanical administration of anaesthetics. *Il Sci Am* 113:471-4 N 27 '15
- Medical research**  
Scientific research in the public health service. *Sci Am* 112:284 Mr 27 '15
- Medical reserve corps.** See United States—Army
- Medicine, Military**  
Trench frost-bite. L. Smith. *Sci Am S* 80:357-8 D 4 '15  
See also Surgery, Military
- Medicine, Primitive**  
Medicine of the Old Testament. S. B. Blakely. *Sci Am S* 80:70-1, 90 J1 31-Ag 7 '15
- Medieval architecture.** See Architecture, Medieval
- Meerschaum**  
Meerschaum deposits of New Mexico. F. V. Bush. *Il map Eng & Min J* 99:941-3 My 29 '15
- Megrim.** See Headache
- Mellon Institute.** See Pittsburgh university. Mellon Institute
- Melting points**  
Determining the melting points of asphalts. J. G. Miller and P. P. Sharples. *Eng & Contr* 43:87-8 Ja 27 '15  
Melting point of copper alloys. H. W. Gillett and A. B. Norton. *Metal Ind n s* 13:228 Je '15  
Melting points of chemical elements and other standard temperatures. *Met & Chem Eng* 13:302 My '15
- Memphis, Tennessee**  
Bridges  
Substructure for new Memphis bridge. M. B. Case. *Il Eng Rec* 71:518-20 Ap 24 '15; Same. *Ry Age* 58:877-81 Ap 23 '15; Same cond. *Ry R* 58:554-6 Ap 24 '15; Same cond. *Eng N* 73:792-3 Ap 22 '15  
Politics and government  
Commission and city manager forms of government. H. H. Rumble, R. W. Peatross and J. E. Burke. *Munic Eng* 49:58-4 Ag '15  
Railroads  
New I. C. station and track elevation at Memphis. *Il plan Ry Age* 58:179-81 Ja 29 '15
- Mendellism**  
Heads and tails and heredity. E. Borel. *Il diags Sci Am S* 78:403-6 D 26 '14
- Mensuration**  
Capacity of cylindrical tanks; a rapid means of determining the contents of tanks of all of the usual lengths and diameters. Horseless Age 36:76 J1 21 '15  
Table of angular deflections in decimals of feet. C. H. Euffert. *Eng N* 74:1087 D 2 '15  
See also Area measurement; Metric system; Surveying; Weights and measures
- Mental diseases**  
Pathology of mental disorders. E. Goodall. *Sci Am S* 79:306-7, 335-6 My 15-22 '15  
See also Nervous system—Diseases
- Mental tests.** See Ability tests
- Menu cards**  
Specimens. *Inland Ptr* 55:64a-64h Ap '15
- Mercantile law.** See Commercial law
- Mercaptopyrimidines**  
Researches of pyrimidines: alkylation of 2-mercaptopyrimidines. T. B. Johnson and H. W. Haggard. *Am Chem Soc J* 37:177-83 Ja '15  
Researches on pyrimidines: the alkylation of 2-mercaptopyrimidines. T. B. Johnson and R. C. Moran. *Am Chem Soc J* 37:2591-7 N '15
- Merchant marine.** See Shipping—United States
- Merchants**  
Human nature and unsuccessful shop management. R. T. Gabler. *Metal Work* 82:823-4 D 25 '14  
Training and holding competent employees. F. Mappes. *Metal Work* 82:781-3 D 4 '14  
See also Business
- Mercuric chloride**  
Association of mercuric chloride in water solution. G. A. Linhart. *Am Chem Soc J* 37:268-74 F '15  
Rate of reduction of mercuric chloride by sodium formate. G. A. Linhart. *Am Chem Soc J* 37:70-6 Ja '15
- Mercury**  
Amalgamation tests. W. J. Sharwood. *Am Inst Min E Bul* 104:1659-70 Ag '15; Excerpts. *Met & Chem Eng* 13:927 D 1 '15  
Cinnabar in western Nevada. *Eng & Min J* 100:668 O 23 '15  
Measurement of oxidation potentials at mercury electrodes: the stannic-stannous potential. G. S. Forbes and E. P. Bartlett. *Am Chem Soc J* 36:2030-40 O '14  
Mercury assay. S. Fischer, Jr. *diags Met & Chem Eng* 12:774 D '14  
Mining and reduction of quicksilver ore at the Oceanic mine, Cambria, Cal. C. A. Heberlein. *diags Am Inst Min E Bul* 98:497-504 F '15; Discussion. 101:1189-41 My '15  
New Almaden quicksilver mine. R. G. Place. *Il Eng & Min J* 100:465 S 18 '15  
Nickel, copper and mercury as affected by the war. *J Ind & Eng Chem* 7:71-2 Ja '15  
Production of quicksilver in the United States in 1914. *Eng & Min J* 99:68 Ja 9 '15  
Recovery of mercury from amalgamation tailing, Buffalo mines, Cobalt. E. B. Thornhill. *flow sheet Am Inst Min E Bul* 104:1653-7 Ag '15; Abstracts. *Met & Chem Eng* 13:330-1, 373, 896 My, N 15-D 1 '15; Discussion. *Am Inst Min E Bul* 108:2455 D '15  
See also Amalgams
- Mercury boilers.** See Boilers, Mercury
- Mercury compounds**  
Salts of the halogenoacetic acids. W. G. Bateman and D. E. Conrad. *Am Chem Soc J* 37:2557-60 N '15
- Mercury vapor rectifier.** See Electric current rectifiers
- Mergelynck museum.** See Ypres, Belgium
- Merö**  
Merö the royal city of Ethiopia. *Sci Am S* 79:98 F 13 '15
- Merriman, Mansfield, 1848-**  
Head of American society for testing materials. *por Iron Tr R* 56:1331 Je 24 '15
- Mesabi range.** See Iron mines and mining—Minnesota

**Mesothorium**

Monazite, thorium, and mesothorium. K. L. Kithill. biblog flow sheet U. S. Bur Mines Tech Pa 110:1-30 '15

Messhouses. See Construction camps

Mestre, Italy

**Bridges**

Design and construction of provincial highway bridge at Mestre, Italy. A. M. Wolf. diags Concrete Cem 6:294-6 Je '15

**Metabolism**

Dynamic conception of the organic individual. Sci Am 118:120 Ag 7 '15

Pathology of mental diseases. E. Goodall. Sci Am S 79:335-6 My 22 '15

**Metal cleaning**

Removing grease by electricity; the modern way to prepare metal articles for plating operations. T. Brown. Metal Ind n s 13:192-4 My '15

**Metal coating**

Development and perfection of Schoop metal spray. II Sci Am 112:362+ Ap 17 '15

Metal spray processes in engineering and art; with cost tables. J. Calder. II diags Am Soc M E J 37:378-83 Jl '15; Abstract. Eng M 49:324-6 S '15

Metal spraying process for coating ornamental products. II Concrete Cem 6:56 Ja '15

Metal spraying process of protecting metal against corrosion. II diags Eng & Contr 42:326-7 S 30 '15

Method of coating iron or steel with lead. Am Gas Light J 103:292 N 8 '15

Plating by impact; Jenkins process. Am Gas Light J 103:253 O 18 '15

Plating by shooting. II Sci Am 118:84 Jl 24 '15

Producing protective coatings by the Schoop metal spraying process. R. K. Morcam. diags Horseless Age 84:827-8 D 2 '14

Protective coatings for metal. H. B. C. Allison. Gen Elec R 18:878-80 S '15; Same. Eng & Contr 44:263-4 O 6 '15

Schoop metal-spraying pistol. R. K. Morcam. Eng & Min J 100:193 Jl 31 '15

Spray process for the production of metallic coatings. Am Gas Light J 102:23-9 Ja 11 '15

Spraying shrapnel shells. II Iron Age 96:355 Ag 12 '15

See also Galvanizing; Plating

**Metal coloring**

Metal coloring by the corrosion process. E. Blassett, Jr. Metal Ind n s 13:17 Ja '15

Pullman finish. Metal Ind n s 13:250 Je '15

Metal corrosion. See Corrosion and anti-corrosives; Metal protection

**Metal cutting**

Cutting aluminum rapidly on a buzz planer. J Fr Inst 180:634 N '15

Cutting tools. II Engineer 119:275-7 Mr 19 '15

Diagram for determining cutting time. I Scheibeck. Mach 21:478 F '15

Duplex cold metal cutting-off machine. II Iron Age 95:503 Mr 4 '15

High temperature flames in metal working. E. R. Swartley, Jr. Iron Age 96:1122 N 11 '15

Oxy-acetylene welding and cutting equipment. S. W. Miller. II diags Mach 22:85-99 O '15

Profile milling and grinding. E. Lea. II diags Mach 21:321 Je '15

Progress in machine shop methods. E. R. Norris. II Iron Tr R 57:679-82+, 747-50 O 7-14 '15

See also Cutting machinery; Gear cutting; Milling cutters; Oxyacetylene flame; Steel cutting; Thread cutting machines

**Metal finishing**

Carbonia finish. II Am Gas Light J 103:31 Ag 9 '15

See also Grinding and polishing; Metal coloring

**Metal lath**

Length of life of walls of mortar on metal lath. W. E. Belcher. Eng Rec 71:754 Je 12 '15

Metal plate floors. See Floors, Metal plate

Metal prices. See Metal trade

**Metal protection**

Aluminum alloys as surface protection for metals subject to high temperatures. Eng N 72:1123 D 3 '14

Calorizing: a protective treatment for metal. H. B. C. Allison and L. A. Hawkins. II Gen Elec R 17:947-51 O '14; Same. Sci Am S 78:341-2 N 28 '14; Same cond. Am Gas Light J 101:309-10 N 16 '14; Same cond. Eng M 48:365-7 N '14; Same cond. Met & Chem Eng 12:730 N '14; Same cond. Iron Age 94:1386-7 D 17 '14; Same cond. Metal Work 82:343-4 D 25 '14

Calorizing metals. W. E. Ruder. Met & Chem Eng 13:325 My '15

Coating of standpipes at Reading, Mass., and Baltimore, Md. F. C. Perkins. II Eng & Contr 44:32 Jl 14 '15

Corrosion of iron. L. C. Wilson. Eng M 48:849-58; 49:58-66, 202-10 Mr-May '15

Corrosion of steel wharves at Kowloon: abstract. S. H. Ellis. diags Am Soc M E J 37:123-4 F '15

Gunitite concrete encasement. diags Ry R 56:129-30 Ja 23 '15

New method of coating iron or steel with lead. Iron Age 96:241 Jl 29 '15

Paint protection of the Panama canal lock-gates. H. Goldmark. Eng N 72:1227 D 17 '14

Paint vehicles as protective agents against corrosion; with discussion. M. Toch. II J Ind & Eng Chem 7:510-14 Je '15

Paints for steel structures. Iron Tr R 56:1062-3 My 27 '15

Prepared paints for metal surfaces. H. A. Gardner. Ry Age (Mech ed) 89:513-14 O '15; Same. Eng & Contr 44:346-7 N 3 '15

Preservative coatings for steel. Iron Age 96:23 Jl 1 '15

Preventing corrosion of steel substructure of the Cortlandt street ferry terminal of the Pennsylvania in New York city with gunitite. II Ry Age 58:352 Ap 16 '15

Protection of iron and steel by paint films. N. A. Dubois. II Sci Am S 77:85-6 F 7 '14; Same abr. Sci Am S 79:160 Mr 6 '15

Protection of iron and steel. J. W. Gibbons. II Ry Age (Mech ed) 89:580-1 N '15

Protection of metal structures; with discussion. F. H. Fay. II diags Eng Soc W Pa 31:115-93 Mr '15; Excerpt. Ry R 57:154 Jl 31 '15

Protection of metals against electrolysis, weathering, chemical fumes, etc. M. Toch. II Sibley J 30:54-6 N '15

Protective coatings for iron and steel. E. P. Later. Foundry 42:497-8; 43:35-4 D '14-Ja '15

Protective coatings for line structure and equipment. R. D. Coombs. Elec W 65:730 Mr 20 '15

Protective coatings for metal. H. B. C. Allison. Gen Elec R 18:878-80 S '15; Same. Eng & Contr 44:263-4 O 6 '15

See also Corrosion and anti-corrosives; Galvanizing; Metal coating

**Bibliography**

Bibliography of metal corrosion and protection. Eng Soc W Pa 31:193-222 Mr '15

Metal spray. See Metal coating

**Metal trade**

Australian metal contracts. L. H. Quin. Iron Age 96:1050-1 N 4 '15

Buying and selling of ores and metallurgical products. C. H. Fulton. U S Bur Mines Tech Pa 83:1-42 '15; Excerpt. Met & Chem Eng 18:640-1 S 15 '15; Excerpt. Sci Am S 80:180 S 18 '15

California metal output, 1914. Eng & Min J 100:529 S 25 '15

Course of metal prices since 1879—annual averages: chart. Eng & Min J 99:50 Ja 9 '15

Doing without Europe. Sci Am 112:128, 157+ F 6-13 '15

German metal prices. Engineer 118:537 D 4 '14

Germany's foreign interests in metals. Eng & Min J 99:339-40 F 13 '15

Metal market features of 1914. C. Lundberg. Iron Age 95:11-12 Ja 7 '15

Metal prices in 1913 and 1914, monthly averages: chart. Eng & Min J 99:49 Ja 9 '15

Metal statistics from the United States geological survey. Metal Ind n s 13:334 Ag '15

Metal, tin-plate and sheet prices for seventeen years. Iron Age 95:24-24a Ja 7 '15

Metals in 1914 from the New York Evening post's annual financial review. J Ind & Eng Chem 7:157-8 F '15

**Metal trade—Continued**

National metal trades association meeting. Iron Age 95:890-3 Ap 22 '15  
Nevada metal production, 1914. Eng & Min J 100:530 S 25 '15

Nickel, copper and mercury as affected by the war. J Ind & Eng Chem 7:71-2 Ja '15

Production of minerals and metals in 1914. Eng & Min J 99:45-77 Ja 9 '15

Retrospective review of 1914—outlook for 1915. Metal Ind n s 13:23-4 Ja '15

Steady progress in co-operation as indicated by reports at the annual convention of the National metal trades association. Iron Tr R 56:825-30 Ap 22 '15

War and our chemical industries. C. H. White. J Ind & Eng Chem 7:62-3 Ja '15

War and our metals. L. O. Kellogg. Eng M 49:18-27 Ap '15

See also Copper industry and trade; Iron industry and trade; Lead industry and trade; Scrap metal; Steel industry and trade; Zinc industry and trade

**Metal trades association, National.** See National metal trades association

**Metal waste**

Flotation of Joplin-Galena slimes. G. Belchic and G. L. Allen. Met & Chem Eng 13:847 N 15 '15

Melting aluminum chips. H. W. Gillett. Metal Ind n s 13:417-18 O '15; Same. Foundry 48:462-3 N '15; Same. Iron Tr R 57:942-3 N 11 '15

Reclaiming brass sweepings. A. W. Lemme. Iron Age 95:946 Ap 29 '15; Same. Foundry 48:191-2 My '15; Same. Metal Ind n s 13:187-8 My '15

Reclaiming metals from clinder. Standard equipment company crusher. II diag Foundry 43:327-8 Ag '15

Reclamation of magnalium from turnings. J. Coulson. Metal Ind n s 13:455-7 N '15; Abstract. Am Soc M E J 37:655-6 N '15

Refining of zinc waste. L. J. Krom. II diag Metal Ind n s 13:281-3 J1 '15

Treatment of waste material containing silver. R. J. Marsh. Metal Ind n s 13:314-17 Ag '15

See also Scrap metal; Tailings

**Metal work**

See also Cutlery; Dies; Ironwork; Machine tools; Metal coloring; Metal working plants; Flating; Punching machinery; Sheet-metal work; Solder and soldering; Welding

**Metal work, Artistic**

Influence of style on the art metal work of modern times. A. F. Saunders. II Metal Ind n s 13:18-20, 889-90; 13:18-19, 324-5 Ja, S '14, Ja, Ag '15

**Metal workers**

Educating sheet metal workers' apprentices. O. B. Clusa. Metal Work 83:327 Je 4 '15

**Metal working machinery**

April exports show \$2,000,000 increase or 150 per cent. Iron Age 95:1846-7 Je 17 '15

Modern sheet metal machinery plant. II plans Metal Work 83:127-9 Ja 15 '15

New sheet metal forming machine. II diag Iron Age 96:577 S 9 '15

Power flanging brake for sheet metal. II Iron Age 96:877 O 14 '15

Ryerson quintuple punching, shearing, and coping machine. II Ind Eng 15:53 F '15

War revives machinery exports. Iron Age 95:183 Ja 21 '15

See also Machine tools; Wire-working machinery

**Metal working plants**

Present practise in the use of tungsten filament lamps for the lighting of metal working plants; with discussion. A. L. Powell and R. B. Harrington. II Illum Eng Soc 9:814-38 no 8 '14

See also Metallurgical plants

**Metallography**

Alumina in steel. G. F. Comstock. II Met & Chem Eng 13:891-5 D 1 '15

Are the deformation lines in manganese steel twins or slip bands? H. M. Howe and A. G. Levy. 4 pls Am Inst Min E Bul 99:587-600; 103:1467-8 Mr, J1 '15

Brass and bronze—offsprings of copper. J. E. Schipper. II map Automobile 33:315-19 Ag 19 '15

Carburization and heat-treatment. J. G. Ayers, jr. II Mach 23:17-23 S '15

Detection of burning in steel. J. E. Stead. II Iron Tr R 57:843-4 O 28 '15

Determination of grain size in metals. Z. Jeffries. Am Inst Min E Bul 108:2359-69 D '15

Effect of titanium alloys on steel. G. F. Comstock. II Iron Tr R 57:391-5+ Ag 26 '15

Formation of the oxidized ores of zinc from the sulphide. Y. T. Wang. II Am Inst Min E Bul 105:2007-12 S '15

High speed tool steels. F. C. A. H. Lantsberry. II Iron Age 96:238-41 J1 29 '15

How sulphides may exist in steel ingots. J. O. Arnold and G. R. Bolsover. Iron Tr R 57:737-8 O 14 '15; Discussion. G. F. Comstock. Iron Tr R 57:894+ N 4 '15

How to detect phosphorus in steel. W. T. Stead. II Iron Tr R 57:988-90 N 18 '15

How to select etching reagents. O. F. Hudson. II Iron Tr R 57:216-20 J1 29 '15

Metallographic grinding and polishing machine. II Iron Age 95:1164 My 27 '15

Metallography of copper. W. Campbell. Met & Chem Eng 13:721 O 15 '15

Metallography of German silver. F. C. Thompson. Met & Chem Eng 12:785-6 D '14

Micrographic inspection of steel: what the United States navy has done in fixing causes of failures. II Iron Age 95:292-3 F 4 '15

Microscopic tests of steel: German investigations at Krupps. B. Strauss. Iron Age 95:793-4 Ap 8 '15

Modified iron-carbon diagram. E. A. Sperry. Met & Chem Eng 13:469-71 Ag '15

Preparation of metal specimens for metallographic tests. II Met & Chem Eng 13:400-1 Je '15

Radiography of metals. W. P. Davey. II Am Inst Min E Bul 104:1515-25 Ag '15; Same. Gen Elec R 13:795-800 Ag '15; Same cond. Iron Age 96:522-4 S 2 '15

Reagent for macroscopic etching. J. L. Jones. II Iron Tr R 56:1303-4 Je 24 '15; Abstract. Eng M 49:919 S '15

Recent developments in cast-iron manufacture. J. E. Johnson, jr. J F R Inst 179:59-93, 171-200 Ja-F '15; Discussion. 179:200-13 F '15

Recent progress in metallography. W. Campbell. bibliog Sch Mines Q 36:249-79 Ap '15

Researches in annealing malleable castings. O. W. Storey. II Foundry 42:474-8 D '14

Steel for steering knuckles. E. F. Lake. II Iron Tr R 56:611-12+ Mr 25 '15

Steel—its pathology. J. R. Schipper. II diag Automobile 32:611-15, 660-3+, 706-3+ Ap 8-22 '15

Structure and hysteresis loss in medium-carbon steel. F. C. Langenberg and R. G. Weber. II Am Inst Min E Bul 98:391-300 F '15; Same. Iron Age 95:506-3 Mr 4 '15; Same. cond. Iron Tr R 57:576-7 S 23 '15

Surface decarburization of steel. J. G. Ayers, jr. II Iron Tr R 56:1805-6+ Je 24 '15; Same. Iron Age 96:5-7 J1 1 '15

See also Alloys; Iron; Steel

**Bibliography**

Recent progress in metallography. W. Campbell. Sch Mines Q 38:252-79 Ap '15

**Metallurgical analysis**

Adjustment of the direct electric lighting current to electro-analysis. E. J. Kaufman. plan Met & Chem Eng 13:524-5 S 1 '15

Analysis of spelter: report. J Ind & Eng Chem 7:547-8 Je '15

Electro-analysis of the second group metals; abstract. E. P. Schoch and D. J. Brown. Eng & Min J 100:621 S 25 '15; Same. Met & Chem Eng 13:568 S 1 '15

See also Assaying; Iron—Analysis; Steel—Analysis

**Metallurgical apparatus**

Arizona copper co.'s Dorr thickener. D. Cole. II diag Eng & Min J 100:131-4 J1 24 '15

Callow pneumatic process of flotation. II plan Met & Chem Eng 13:571-2 S 1 '15

Device to introduce deoxidants into molten metal. diag Iron Age 95:844 Ap 15 '15

**Metallurgical apparatus—Continued**

Precipitating apparatus for use in cyaniding. plan Eng & Min J 99:1079 Je 19 '15  
 Simmonds' retort-discharging machine. 11 Eng & Min J 99:449-50 Mr 6 '15  
 Siphons on solution samplers. diag. Eng & Min J 99:863 My 15 '15  
 Use of hydrometallurgical apparatus in chemical engineering. J. V. N. Dorr. 11 diag. J Ind & Eng Chem 7:119-30 F '15; Same. Met & Chem Eng 13:55-9, 91-8 Ja-F '15

See also Concentrating tables; Dorr agitators; Trent agitators

**Metallurgical patents**

Laist roasting patents. diag. Eng & Min J 99:282-4 F 6 '15

See also Alloys—Patents

**Metallurgical plants**

Anaconda leaching and acid plants. El. P. Mathewson. 11 plans Eng & Min J 99:723-7 Ap 24 '15

Design of modern copper plants. C. H. Repath. Met & Chem Eng 13:660-1 O 1 '15

Gold milling in California—a comparison. L. A. Palmer. 11 diag. Met & Chem Eng 13:617-24 S 15 '15

How titanium-aluminum bronze is produced. C. Vickers. 11 Foundry 43:273-3 Jl '15

Labor and power used in cyanide mills. H. A. McGraw. Eng & Min J 99:312-14 F 13 '15

Mine and metallurgical construction in 1914. Eng & Min J 99:78-80 Ja 9 '15

New mill of the Daly West mining co., Park City, Utah. L. C. Howard. 11 plan flow sheet Met & Chem Eng 13:597-602 S 15 '15

Zinc manufacture in the Pittsburgh district; plant of the American zinc & chemical company at Langeloth, Pa. 11 map Iron Age 95:1064-7 My 13 '15

See also Cyanide plants; Iron works; Smelting works; Steel works

**Accidents**

Accidents in metallurgical plants in 1913 and 1914. Eng & Min J 100:816 N 13 '15

**Cost**

Building the Tough-Oakes mill. J. A. Baker. 11 diag. Eng & Min J 100:869-74, 915-18 N 27-D 4 '15

Cost of mill construction. H. T. Curran. Eng & Min J 100:345-7 Ag 28 '15; Same. Eng & Contr 44:266-8 O 6 '15

Tonopah plant of the Belmont milling co.: construction costs. A. H. Jones. Am Inst Min E Bul 104:1731-2 Ag '15; Same. Eng & Min J 100:481 S 18 '15; Abstract. Met & Chem Eng 13:811-12 N 1 '15

**Metallurgists**

Good advice to consulting metallurgists and others. W. B. Blythe. Met & Chem Eng 13:442-3 Jl '15

**Metallurgy**

American institute of mining engineers 110th meeting. Met & Chem Eng 13:177-85 Mr '15  
 Formation and decomposition of sulphates during roasting. B. Dudley, jr. Met & Chem Eng 13:221-6, 303-8 Ap-May '15

Metallurgical temperature chart. W. J. Kiln. Foundry 43:142a Ap '15

Metallurgical treatment of the low-grade and complex ores of Utah. D. A. Lyon, R. H. Bradford, S. S. Arentz, O. C. Ralston, and C. L. Larson. U S Bur Mines Tech Pa 90:1-39 '15

Metallurgical work at the National physical laboratory 1914-1915. Met & Chem Eng 13:583-5 S 15 '15

Metallurgy at international engineering congress. Met & Chem Eng 13:655-62, 721-9 O 1-15 '15

Metallurgy in the Coeur d'Alenes. H. A. McGraw. 11 Eng & Min J 100:327-30 N 20 '15

Progress in metallurgy. J. Douglas. Am Inst Min E Bul 100:763-6 Ap '15

Separation of white metal and gunmetal borings. R. H. Walton and G. T. Bailey. diag. Met & Chem Eng 13:204 Ap '15

See also Alloys; Assaying; Blast furnaces; Chemical engineering; Chemistry, Technical; Cyanide process; Electrometallurgy; Electrostatic separation of ores; Filters and filtra-

tion (metallurgy); Flue dust; Flux; Furnaces, Metallurgical; Hydrometallurgy; Magnetic separation of ores; Metallurgical analysis; Metallurgical apparatus; Metallurgical plants; Metallurgists; Metals; Ore treatment; Smelting; Stamp mills; also names of metals, e. g. Aluminum metallurgy, Copper metallurgy, Iron metallurgy, Lead metallurgy, Silver metallurgy, Steel metallurgy, Zinc metallurgy

**Exhibitions**

Co-operative metallurgical exhibit at the Panama-Pacific international exposition. A. E. Wells and G. H. Clevenger. 11 Met & Chem Eng 13:743-5 O 15 '15

**Standards**

Standardization of metallurgical units. Met & Chem Eng 13:828-9 N 15 '15

**Metals**

American institute of metals annual meeting, Atlantic City. Foundry 43:394-7 O '15

American institute of metals meeting at Atlantic City, Sept. 28. Iron Age 96:819-22 O 7 '15

Behaviour of metals under stress. F. C. A. H. Lantaberry. Engineer 119:68 Ja 15 '15

Conductivity of metals. J. J. Thomson. Sci Am S 80:114-15 Ag 21 '15

Effect of acetylene on metals. Sci Am 113:403 N 6 '15

Electronic theories of the properties of metals. C. H. Lees. Sci Am S 80:320 N 13 '15

Hardening of metals. Am Soc M E J 37:489-90 Ag '15

Institute of metals: annual general meeting. Engineer 119:309-10 Mr 26 '15

Institute of metals annual meeting, London, March 18-19. Foundry 43:193-4 My '15

Many carbon-free metals and alloys now available. H. D. Browne. Eng N 74:636-7 S 30 '15

Metastability of metals. A. Vosmaer. Met & Chem Eng 13:535-6 S 1 '15

Method of reducing some metals in crystallized form on glass slips as permanent microscope mounts. J. H. Bowman. 11 Am Chem Soc J 37:1468-71 Ja '15

Munition metals. H. C. H. Carpenter. Sci Am S 80:262-3 O 23 '15; Abstract. Eng. M 50:112-13 O '15

Passivity of metals. H. G. Byers and S. C. Langdon. diag. Am Chem Soc J 36:2004-11 O '14

Properties of metals at higher temperatures; abstract. P. Ludwik. Am Soc M E J 37:604-5 O '15

Rapid analysis of bearing metals and high-copper content alloys. C. G. Lutts. Met & Chem Eng 13:346-7 Je '15

Weight per cubic foot and per cubic inch. W. L. Tryon. Foundry 43:222a Je '15

See also Alloys; Amalgams; Annealing; Assaying; Babbitt metal; Chemistry, Inorganic; Corrosion and anti-corrosives; Foundry practice; Gun metal; Hardening; Hardness; Metal work; Metallography; Metallurgy; Mines and mineral resources; Ore deposits; Slag; Smelting; Solder and soldering; Welding; Wire; also names of metals and alloys, e. g. Aluminum, Brass, Bronze, Cobalt, Copper, Gold, Iron, Lead, Manganese, Mercury, Nickel, Steel, Tin, Zinc

**Diseases**

Fatigue and disease of metals. P. Kreuzpointer. Iron Age 95:950-1 Ap 29 '15

Liberty bell and disease of metals. 11 Iron Age 95:391-3 F 13 '15; Same. Sci Am S 79:236-7 Ap 10 '15

**Testing**

Brinell hardness testing of non-ferrous alloys. V. Skillman. Metal Ind n s 12:423-4 O '14; Same. Foundry 43:111-12 Mr '15

Comparison of hardness testing apparatus. Mach 21:364 Ja '15

Endurance of metals under repeated stresses; some new facts, and a new method of testing. diag. Locomotive 30:130-42 Ja '15

Fatigue of copper alloys. El. Jonson. Metal Ind n s 13:238-4 Jl '15; Same. Eng Rec 72:22-3 Jl 3 '15; Same, with discussion. Foundry 43:311-12 Ag '15

**Metals—Testing—Continued**

- Finding blowholes with the X-rays. C. H. Tonamy. *Il diags Foundry* 48:456-6 N '15;  
 Same cond. *Iron Age* 96:1064-5 N 4 '15  
 Magnetic studies of mechanical deformation in certain ferromagnetic metals and alloys. H. Hanemann and P. D. Merica. *Il Am Inst Min E Bul* 108:2371-85 D '15  
 Mechanical properties of metals. F. C. A. H. Lantaberry. *Metal Work* 82:827 D 25 '14  
 Test pieces for tensile tests. H. Friedmann. *diags Metal Ind n s* 13:247 Je '15

**Metals, Fatigue In.** See **Fatigue in metals**

**Metamorphism (geology)**

- Observations on contact metamorphic ore deposits. B. Prescott. *diags Econ Geol* 10:55-69 Ja '15

**Metastability.** See **Allotropy**

**Meteor mountain, Arizona**

- Mine in a meteor-made crater. A. Chapman. *Il Sci Am* 112:70 Ja 16 '15

**Meteorites**

- Mine in a meteor-made crater. A. Chapman. *Il Sci Am* 112:70 Ja 16 '15

**Meters**

- Direct-reading volumetric and velocity meter for measuring fluid flow. *Il Eng N* 72:1213 D 17 '14  
 Levin flow meter and metering flow bend. *diags Power* 42:372-3 S 14 '15  
 Rate-flow meter. H. C. Hayes. *Am Soc M E J* 37:159-64 Mr '15; *Discussion.* 37:164, 225-6 Mr-Apr '15  
 Report of the committee on measurement of gas in large volumes. *diag Am Gas Inst Pro* 8:pt 1, 877-704; *Discussion.* 705-20 '14  
 Republic flow meter. *diag Power* 42:612 N 2 '15; *Eng & Min J* 100:888 N 27 '15  
*See also* Coal meters; Compressed air meters; Electric meters; Extensometers; Gas meters; Liquid meters; Pitometer; Steam meters; Viscometers; Water meters

**Reading**

- Camera for reading meters. *Il Am Gas Light J* 103:141 Ag 30 '15; *Mach* 23:75-6 S '15

**Meters, Electric.** See **Electric meters**

**Meters, Liquid.** See **Liquid meters**

**Meters, Steam.** See **Steam meters**

**Methane**

- Influence of temperature and pressure on the explosibility of methane-air mixtures. G. A. Burrell and L. W. Robertson. *diag J Ind & Eng Chem* 7:417-19 My '15  
 Physical laws of methane gas. P. F. Walker. *Am Soc M E J* 37:176-9 Mr '15

**Metric system**

- Advantages of metric system. C. Vivier. *Automobile* 33:988-9 N 25 '15  
 If decimals of degree why not decimals of full circle? R. C. Hardman. *Eng Rec* 72:490 O 16 '15

**Metropolis, Illinois****Bridges**

- Metropolis bridge over the Ohio river. *diags Ry Age* 59:160 J1 23 '15

**Mexico**

- Concrete buildings in Mexico. *Bldg Age* 37:29-30 F '15  
 Conditions in Mexico. *Met & Chem Eng* 13:209-10 Ap '15  
 Situation in Mexico. *Eng & Min J* 100:445-6 S 11 '15  
*See also* Architecture—Mexico; Geology—Mexico; Latin America; Mines and mineral resources—Mexico; Petroleum—Mexico; Railroads—Mexico

**Economic conditions**

- Business in Mexico. *Eng & Min J* 99:900 My 22 '15

- New mining taxes in Mexico. *Eng & Min J* 100:691-2 O 23 '15

**Industries and resources**

- Occurrences of petroleum in eastern Mexico as contrasted with those in Texas and Louisiana. E. T. Dumble. *Am Inst Min E Bul*

- 104:1623-38 Ag '15; *Discussion.* 108:2434-5 D '15

*See also* Mines and mineral resources—Mexico; Petroleum—Mexico

**Law**

- More Mexican mining law. *Eng & Min J* 100:688 O 23 '15  
 New mining edict in Mexico. *Eng & Min J* 99:668-9 Ap 10 '15  
 New mining taxes in Mexico. *Eng & Min J* 100:811-12 N 13 '15

**Miami copper company**

- Miami copper company in 1914. J. P. Channing. *Eng & Min J* 99:55-6 Ja 9 '15

**Mica**

- Sheet mica for stove openings. *Metal Work* 84:151 J1 30 '15  
 Temperature limits for mica insulation; discussion. *Elec W* 66:1130 N 20 '15  
 Temperature of mica insulation; discussion. *Elec R & W Elec'n* 67:942 N 20 '15  
 X-ray examination of built-up mica. C. N. Moore. *Il diag Gen Elec R* 13:195-7 Mr '15; *Same.* *Sci Am S* 80:253 O 16 '15

**Michigan**

*See also* Roads—Michigan

**Michigan Central railroad**

- Economic value of the Detroit river tunnel. *Sci Am* 113:422 N 13 '15  
 Important terminal improvement; Detroit river tunnel. *Il Sci Am S* 80:308 N 13 '15  
 Michigan Central and the Big Four. map *Ry Age* 58:731-3 Ap 2 '15  
 69th annual report. *Ry Age* 58:771-2 Ap 2 '15  
 Michigan good roads association  
 7th annual convention, Grand Rapids, March 9-12. *Good Roads n s* 9:149-50 Ap 3 '15

**Michigan railway**

- New heavy electric railroad opened in Michigan. *diags Eng N* 74:212-13 J1 29 '15

- Michigan state association of master plumbers  
 23d annual convention, Detroit, April 6-7. *Dom Eng* 71:40-2 Ap 10 '15

- Michigan state association of sheet metal contractors  
 Annual convention, Grand Rapids, Mich., March 10-11. *Metal Work* 83:445-6+ Mr 19 '15

**Michigan university**

- Automobile engineering curricula. W. T. Fishleigh. *Horseless Age* 35:111-14 Ja 20 '15

**Micrometers**

- Brown & Sharpe machinists' small tools. *Il Mach* 21:759-60 My '15  
 History of the micrometer caliper again. L. D. Burlingame. *Mach* 22:58-9 S '15  
 How we came to have the micrometer caliper. L. D. Burlingame. *Il diags Mach* 21:777-83 Je '15  
 How we came to have the micrometer caliper. W. D. Forbes. *Mach* 22:11 S '15  
 How we came to have the Slocomb shop micrometer. J. T. Slocomb. *diag Mach* 21:999-1000 Ag '15  
 Micrometer caliper as a machine shop gage. J. T. Slocomb. *Mach* 21:309-10 D '14  
 Reed & Prince micrometers. *Il Iron Age* 96:750 S 30 '15

**Microphones**

- Aerial range-finding with electrical ears. *Il Sci Am* 113:377 O 30 '15  
 Submarines betrayed by sound waves. *Il Sci Am* 113:333+ O 16 '15

**Microphotography.** See **Photomicrography**

**Micropyrometer**

- Emissivity of metals and oxides; measurements with the micropyrometer. G. K. Burgess and R. G. Waltenberg. *U S Bur Stand Bul* 11:591-605 My 27 '15; *Excerpt.* *Sci Am S* 80:117 Ag 21 '15

**Microscopes and microscopy**

- Ultramicroscope and its application to modern biology. *Sci Am S* 80:211 O 2 '15

*See also* Metallurgy; Photomicrography

**Middle age**

- Why do men over forty break down? C. F. Bolduan. *Sci Am* 113:63 J1 17 '15

- Midvale steel & ordnance co.**  
Worth brothers and Remington arms; additional absorptions by the Midvale steel & ordnance co. Iron Age 96:908-9 O 14 '15
- Migraine.** See Headache
- Mildew**  
Study of some curious painting phenomena. H: A. Gardner. II J Fr Inst 179:681-6 Je '15
- Militarism**  
What is militarism? Sci Am 112:78 Ja 23 '15  
See also Peace; United States—Defenses
- Military aeronautics.** See Aeronautics, Military
- Military art and science**  
Art of deception in war. II Sci Am 112:124-1 F 6 '15  
As it was in the beginning. Sci Am 113:136 Ag 14 '15  
Chlorine gas on the battlefield. Sci Am 112:452 My 15 '15  
Dispersing asphyxiating gases. II Sci Am 113:95 JI 31 '15  
Improvised means of crossing rivers. II Sci Am 112:228 Mr 6 '15  
Invisible man behind the gun. Sci Am 112:46 Ja 9 '15  
Measurement of distances in war. A. Keller. II diags Sci Am S 79:324-5 My 22 '15  
Review of the year 1914: army and navy. Sci Am 112:6 Ja 2 '15  
Trench warfare; ten hours of trench digging for ten minutes of rifle fire. W. D. A. Anderson. II Sci Am 113:6-8 JI 3 '15  
See also Aeronautics, Military; Artillery; Automobiles in war; Coast defense; Explosives, Military; Fortification; Grenades; Guns; Intrenchments; Mines, Military; Projectiles; Range finding; Shells; Shooting, Military; Shrapnel shells; Sieges; Target practice; Torpedoes; Transportation, Military; War games; also headings beginning Military
- Military automobiles.** See Automobiles, Military
- Military bridges**  
Building bridges under fire. M. Wells. II Sci Am 111:456-7 D 5 '14  
Pontoon bridges and rafts. II Sci Am S 80:116 Ag 21 '15
- Military cars.** See Cars, Military
- Military communication.** See Military telegraph; Military telephone
- Military education**  
Business men's training camp at Plattsburg. II Sci Am 113:182-3 Ag 28 '15  
Military preparedness an insurance for peace. L. Wood. Eng Rec 71:768-9 Je 19 '15  
More military and naval academies. R. S. Spear. Sci Am 113:9 JI 3 '15  
West Point for non-commissioned officers. F. C. Butler. Sci Am 112:403 My 1 '15
- Military engineering**  
Electricity in present-day warfare. II Sci Am 113:494-1 D 4 '15  
Engineer function in modern warfare. Eng & Min J 100:467-8 S 18 '15  
Engineer in the field. J. Graham. Sci Am S 79:98 F 13 '15  
Mobilizing the engineer companies of the militia. D. A. Tomlinson. II Eng Rec 72:314-15 S 11 '15  
Pioneers of the army. T. Wolff. Sci Am S 80:228-7 O 9 '15  
Protecting a retreating army; effective methods of destroying its lines of communications. II Sci Am 112:406 My 1 '15  
Specialized experience of engineers and contractors vital to country's defense. G. Ferrine. II Eng Rec 72:554-6 N 13 '15  
War geology. W. Salomon. Sci Am S 80:267 O 23 '15  
See also Fortification; Intrenchments; Military bridges; Military hygiene; Military lighting; Military reconnaissance; Military telephone; Mines, Military; Transportation, Military
- Military explosives.** See Explosives, Military
- Military geography**  
Geographic aspects of the war. D. W. Johnson. diags Sci Am S 80:194-5, 223-4 S 25-O 2 '15  
Ups and downs of war. Sci Am 111:502 D 19 '14
- Military hygiene**  
Pure water for the army; various forms of field-service filters. II Sci Am S 80:89 Ag 7 '15  
Purifying drinking water on the field. Sci Am S 80:238 O 30 '15  
Sterilization of water-supplies for troops on active service. G. S. Woodhead. Sci Am S 79:292-3 My 8 '15  
Trench frost-bite. L. Smith. Sci Am S 80:357-8 D 4 '15  
See also Surgery, Military; War—Relief of sick and wounded
- Military lighting**  
Watching the enemy from the fighting line. II Sci Am S 80:83-9 Ag 7 '15
- Military photography.** See Photography, Military
- Military postal service.** See Postal service, Military
- Military reconnaissance**  
Aerial scouting. H. Bannerman-Phillips. Eng M 50:101-3 O 15  
Mechanical aids for air scouts. II Sci Am 112:175 F 20 '15  
Military air scouting by motion pictures. H. A. Dench. Sci Am 112:156 F 13 '15
- Military shooting.** See Shooting, Military
- Military surgery.** See Surgery, Military
- Military telegraph**  
Telegraph and telephone in the German army. II Sci Am S 80:177, 181 S 13 '15
- Military telephone**  
Army field telephone and buzzer devised by signal corps. II Elec W 66:849-50 O 16 '15  
Field telephones for use in war; abstract. C: R. Darling. diags Elec W 66:874-5 O 16 '15  
French field telephones. II Sci Am S 80:283 N 6 '15  
German military telephone system. H. Marchand. II Sci Am 111:511 D 19 '14  
Telegraph and telephone in the German army. II Sci Am S 80:177, 181 S 13 '15
- Military tools**  
Military tool with wide variety of uses. II Sci Am 113:471 N 27 '15
- Military transportation.** See Transportation, Military
- Militia.** See United States—Militia
- Milk**  
Co-operation between railroads and shippers on milk supply. Ry R 56:158-9 Ja 30 '15  
Electric sterilization of milk. Elec R & W Elec'n 67:994 IV 27 '15  
Electrified milk-distributing depot using central station service. II Elec W 66:650 S 18 '15  
Motors simplify operations in milk depot. J. L. Wiltse. II Elec W 66:363-5 Ag 14 '15  
Purification of milk by electricity. II Elec W 64:1153-4 D 12 '14
- Analysis**  
Device for the successive determination of the solids and fat in milk and other fluids. A. Seidenberg. J Ind & Eng Chem 7:769-73 S '15  
Experimental data comparing the delicacy of different tests for hydrogen peroxide in milk. I. T. Darlington. J Ind & Eng Chem 7:676 Ag '15  
Manufacture of condensed milk, casein, etc. R. T. Mohan. Sci Am S 80:26 JI 10 '15
- Bacteriology**  
Studies in bacterial metabolism. A. I. Kendall, A. A. Day and A. W. Walker. Am Chem Soc J 36:1937-66 S '14
- Milk, Condensed**  
Manufacture of condensed milk, casein, etc. R. T. Mohan. Sci Am S 80:14-15, 26 JI 3-10 '15
- Miller, Spencer, 1859-**  
Sketch. por Eng M 50:217 N '15
- Milling costs.** See Ore treatment—Cost
- Milling cutters**  
Interlocking milling cutters. diags Mach 21: 911-12 JI '15
- Milling machinery.** See Crushing machinery

**Milling machines**

- Compound indexing on the milling machine. J; A. Hinckley. Mach 21:1005 Ag '15
- Cutting short lead spirals. *Il* Iron Age 94:1293 D 3 '14
- Efficiency in milling and boring: Dodge miller turns out 18 cylinder blocks and heads in 1 hour. *Il* Automobile 32:877 F 25 '15
- Fast continuous milling. *Il* Mach 21:398 Ag '15
- Fixtures for continuous milling. A. B. Bachmann. *Il* diags Mach 21:351-4 Ja '15
- History of the milling machine. L. D. Burlingame. *Il* Iron Tr R 56:923-6 My 6 '15
- Kempsmith spindle nose construction. *Il* diag Mach 21:1021 Ag '15
- Machine for milling spiral grooves. G. Werner, jr. diag Mach 22:163-4 O '15
- Milling attachments. L. J. Rodgers. *Il* Mach 21:272 D '14
- Oesterlein milling machines. *Il* Mach 21:595 Mr '15; Iron Age 95:444 F 25 '15
- Planotype milling machine. *Il* Engineer 120: 139 Ag 6 '15
- Rapid finishing of automobile castings. *Il* Iron Age 94:1282-3 D 3 '14
- Spiral milling attachment. *Il* diag Iron Age 95: 1389 Je 24 '15
- Square-end milling fixture. O. A. Webster. *Il* diags Mach 21:1009 Ag '15
- Three adaptable milling fixtures. C. F. Meyer. *Il* diags Mach 21:962-5 Ag '15
- Turning a ball on the milling machine. G. Silder. diag Mach 21:407 Ja '15
- Twin machines for Packard rear axles. *Il* Automobile 32:684 Ap 15 '15
- Uninterrupted feed milling machine. *Il* Iron Age 96:1284 N 25 '15
- Vertical milling machine for shrapnel. *Il* Iron Age 95:1281 Je 10 '15
- See also* Die-sinking machines; Gear cutting; Machine tools

**Mills and millwork**

- Estimating the cost of mill buildings. C. F. Dingman. Eng & Contr 44:185 S 8 '15
- Wind stresses in steel mill-buildings. R. Fleming. diags Eng N 73:210-14 F 4 '15
- See also* Cotton mills; Factories; Flour mills; Knitting mills; Machinery; Manufactures; Paper mills; Rolling mills; Sawmills; Scientific management; Textile mills

**Milwaukee, Wisconsin****Bridges**

- Actual operations in connection with the shifting of double-track swing spans on the Chicago & Northwestern Ry. *Il* Eng & Contr 43:359-60 Ap 21 '15
- Design and construction work preliminary to the actual shifting of a double-track swing bridge on the Chicago & Northwestern Ry. plans Eng & Contr 43:356-9 Ap 21 '15

**Railroads**

- Operating the Milwaukee (Wis.) terminals of the St. Paul. W. B. Hinrichs. Ry Age 57: 1050-1 D 4 '14

**Rapid transit**

- Milwaukee fare case decided. Elec Ry J 46: 52-3 J1 10 '15
- Zone system of fares in practice; with discussion. R. B. Stearns. Elec Ry J 45:386-8 My 1 '15

**Sanitary affairs**

- Milwaukee bureau of street sanitation. Munic J 37:888-90 D 17 '14

**Sewerage**

- Activated-sludge experiments. T. C. Hatton. diags Eng N 74:134-7 J1 15 '15
- Milwaukee sewerage problem and the sewage treatment testing station. T. C. Hatton. Eng & Contr 42:387-9 O 14 '14
- World's first full-scale plant for the treatment of sewage by the activated sludge process. T. C. Hatton. diags plan Eng & Contr 44:322-7 O 27 '15; Same cond. Eng Rec 72: 481-4 O 16 '15; Abstract. Munic J 39:776-7 N 18 '15

**Water supply**

- Construction plant and methods employed on new water works intake tunnel. *Il* diags plan Eng & Contr 43:352-5, 371-2 Ap 21-28 '15

- Curtailment of water waste and selection of meters at Milwaukee water works. Eng & Contr 42:176 Ag 19 '14
- Meter maintenance systematized by water-works department in Milwaukee. *Il* Eng Rec 71:587-8 My 8 '15
- Special features in the new intake tunnel at Milwaukee. L. G. Warren. diags Eng N 73: 686-7 Ap 8 '15

**Mine accidents**

- Accident prevention by the New Jersey zinc co. B. F. Tillson. Eng & Min J 98:1084-9 D 12 '14
- Accident rate at various hours of the day; table. Eng & Min J 100:239 Ag 7 '15
- Accidents from falls of rock or ore. E. Higgins. *Il* U S Bur Mines Circ 17:1-13 '14; Same. Iron Tr R 56:375-7 + F 18 '15
- Causes of electrical accidents in English collieries. diag Elec R & W Elec'n 67:908 N 13 '15
- Compensation laws and accidents. E. N. Zern. Colliery 35:438-5 Mr '15
- Metal-mine accidents in the United States, during the calendar year 1913. A. H. Fay. U S Bur Mines Tech Pa 94:1-70 '14
- Mine beyond the sunshine. Sci Am 113:450 N 20 '15
- Statistical data on fatal and nonfatal accidents. C. B. Dutton. tables U S Bur Mines Bul 75:174-245 '15
- Unusual and historic accidents. W. R. Ingalls and L. O. Kellogg. U S Bur Mines Bul 75: 257-76 '15

*See also* Coal mines and mining—Accidents and explosions; Firedamp; Mine explosions; Mine fires; Mine rescue work; Mining engineering—Safety devices and measures; Safety lamps

**Mine accounting**

- Recording and comparing mining data. F. T. Rubidge. Eng & Min J 99:193-4 Ja 23 '15

**Mine air**

- Humidifying mine air. J. W. Reed. Colliery 35:330-2 Ja '15
- Humidity of mine air. Colliery 35:302 Ja '15
- Humidity of mine air. R. Y. Williams. *Il* map U S Bur Mines Bul 83:1-63 '14
- Hydrograph. H. Briggs. Colliery 35:374-5 F '15
- Rock-dust sampler. O. Ruhl. *Il* Eng & Min J 99:238 Ja 30 '15

*See also* Mine gases; Mine ventilation

**Mine animals. See Live stock; Mules****Mine buildings**

- Aurora's change house. W. S. Black. *Il* diag plan Eng & Min J 100:310-11 Ag 21 '15
- Saw-tooth colliery building. *Il* diags Colliery 35:235 D '14

- Shaft-rockhouse practice in the copper country. L. H. Goodwin. *Il* diags Eng & Min J 99:1061-6, 1107-10; 100:7-12, 53-7 Je 19-J1 10 '15

*See also* Miners' houses

**Mine bulkheads**

- Design, construction, and cost of two mine bulkheads at Hibernia mine, New Jersey. S. L. Wise and W. Strache. diags Colliery 35:256-9 D '14; Same. Eng & Contr 42:309 S 30 '14

**Mine cages. See Mine hoisting****Mine cars**

- Application of roller bearings to mine-car haulage. P. N. Case. diags Eng & Min J 100:144-6 J1 24 '15
- Automatic end gate for mine cars. A. G. Morlock. diags Eng & Contr 42:185 F 24 '15
- Mine chutes. See Mine timbering

**Mine construction**

- Arching in collieries. R. G. Clark. diags Colliery 35:292-6 Ja '15
- Concrete in mine work. S. Reynolds. Colliery 35:407-8 Mr '15
- Concrete underground ore pocket at Copper Queen. F. M. Heidelberg. diags Eng & Min J 100:559-61 O 2 '15
- Design of angle-sheave frames. F. L. Burr. Eng & Min J 99:359-64, 403-8 F 20-27 '15

**Mine construction—Continued**

Reinforced concrete props and beams in mines. S. M. Dixon. *Colliery* 35:431-2 Mr '15

See also Headframes; Mine bulkheads; Mine dams; Mine shafts; Mine timbering; Mine tipples

**Mine dams**

Effectual sealing of water dams. F. H. Waterhouse. *diags Colliery* 36:35-6 Ag '15

**Mine drainage**

Roosevelt drainage tunnel, Cripple Creek, Colorado. T. H. Sheldon. *il map Eng & Min J* 100:545-9 O 2 '15

See also Mine pumping

**Mine equipment**

Design and construction of a concrete idler stand. H. H. Hunter. *diags Eng & Contr* 44:413-14 N 24 '15

Electrical equipment rules. *Colliery* 35:873-4 J '15

Skip transfer at incline-shaft collar. A. C. Vivian. *diags Eng & Min J* 98:1095 D 19 '14

See also Electricity in mining; Mine cars; Mine haulage; Mine hoisting; Mining machinery

**Mine explosions**

Air blasts at Quincy mine, Houghton, Mich. *Eng & Min J* 99:314-15 My 22 '15

Carlisle mine explosion. W. Z. Price. *Colliery* 35:464 Ap '15

Coroner's report on Mulga disaster. *Colliery* 35:236 D '14

Explosibility of acetylene. G. A. Burrell and G. G. Oberfell. *U S Bur Mines Tech Pa* 112: 1-12 '15

What a miner can do to prevent explosions of gas and of coal dust. G. S. Rice. *U S Bur Mines Circ* 21:1-21 '15

See also Coal dust; Coal mines and mining—Accidents and explosions; Mine accidents; Mine air; Mine fires; Mine gases

Mine fans. See Mine ventilation

**Mine fires**

Anticipating mine fires. J. McCrystle. *plan Colliery* 36:79-80 S '15

Black Hawk mine fire; use of oxygen helmet apparatus. J. B. Forrester. *map Colliery* 36: 12-18 Ag '15

Causes of mine fires. A. C. Starr. *Colliery* 35: 532 My '15

Fire-fighting methods at the Mountain View mine, Butte, Mont. C. L. Berrien. *il pls Am Inst Min E Bul* 102:1215-45 Je '15

Reversing main air-currents. W. Clifford. *diags Colliery* 35:544-5 My '15

Stripping at the National colliery. *il Colliery* 35:598-9 Je '15

See also Firedamp; Mine explosions; Safety lamps

**Mine foremen**

Answers to examination questions for mine foreman and fire boss in various states in 1914. *Colliery* 35:447-50 Mr '15

Answers to examination questions for mine foreman and fire boss in various states in 1915. *Colliery* 36:163-5 O '15

Mine foreman and first aid. W. McIntyre, jr. *Colliery* 35:296 Ja '15

Questions selected from those asked at an examination for mine foreman, held in Price, Utah, September 15 and 16, 1914. *Colliery* 35: 217-20, 276-9, 338-41 N '14-Ja '15

Questions selected from those asked at examinations for mine foreman and fire boss in various states in 1915. *Colliery* 36:50-4, 105-7 Ag-S '15

**Mine gases**

Gas caps and gas discharges. J. Thompson. *Colliery* 35:608-9 Je '15

Gas-detecting apparatus. W. G. McMillan. *Colliery* 35:611 Je '15

Occurrence of explosive gases in coal mines. N. H. Darton. *bibliog diags maps U S Bur Mines Bul* 72:1-237 '15

Origin, occurrence, and behavior, of the gases usually found in mines. F. Haas. *Colliery* 35:375-9 F '15; Discussion. 35:436-41, 483-5, 501-2 Mr-Apr '15

See also Firedamp; Mine air; Mine explosions; Mine ventilation

**Mine haulage**

Electric haulage problem. *Colliery* 35:560 My '15

Handling stock-pile cars. F. H. Armstrong. *il Eng & Min J* 100:355 Ag 28 '15

Mine mule investigations. G. E. Wentworth. *Colliery* 35:361-2 D '14

Moving ore in flat stopes. E. M. Weston. *il diag Eng & Min J* 100:565-6 O 23 '15

Proposed incline haul. M. M. Haley. *plan Colliery* 36:127 O '15

Rate of hand tramming. *Eng & Min J* 100:226 Ag 7 '15

Regenerating electric ore railroad. *Eng M* 49: 121-2 Ap '15

Tramming and hoisting at Copper Queen mine. G. F. G. Sherman. *il diags Am Inst Min E Bul* 105:1837-35 S '15

See also Locomotives, Mine; Mine cars; Mine hoisting; Mine tipples; Mine tracks

**Cost**

Gasoline locomotive haulage; its cost as compared to mule haulage at mines of Trooper coal co., Bradel, Ky. *il Colliery* 35:547-8 My '15

**Mine hoisting**

Alaskan ore-hoisting rig. W. Swaren. *diag Eng & Min J* 100:392 S 4 '15

Automatic landing chairs. *il Eng & Min J* 100: 761 N 6 '15

Balancing dummy in inclined shaft. L. H. Goodwin. *Eng & Min J* 98:1001-2 D 5 '14

Bucket-dumping device. E. A. Linke. *diag Eng & Min J* 99:944 My 29 '15

Design of angle-sheave frames. F. L. Burr. *Eng & Min J* 99:359-64, 403-3 F 20-27 '15

Diameter of sheaves for hoisting rope. *Eng & Min J* 100:883 N 27 '15

Electric winding; abstract. *Elec W* 56:376 O 16 '15

Facing-off a brake wheel. A. E. Hall. *il Eng & Min J* 100:760 N 6 '15

Features of the electrical equipment for the Granite mountain hoist. G. B. Rosenblatt. *il diag Assn Eng Soc J* 54:199-209 My '15

Fleeting device for hoist with conical drums. F. H. Armstrong. *il diag Eng & Min J* 99: 945 My 29 '15

French electric mine hoist. *il Colliery* 35:468-70-4 Ap '15

Granite mountain hoist. G. B. Rosenblatt. *Eng & Min J* 100:115-16 J '15

Hoist and compressor power curves. P. E. Barbour. *Eng & Min J* 99:989-9 Je 5 '15

Large electric hoist. W. Sykes. *il diags Am Inst E E Pro* 34:1819-27 Ag '15

Large electric hoist for Montana mine. *Elec R & W Elec'n* 67:943-4 N 20 '15

Lateral friction of winding ropes; abstract. H. W. G. Halbaum. *Am Soc M E J* 37:351-2 Je '15

Men and machinery of the Comstock—pioneer hoisting works. G. W. Dickie. *il Eng & Min J* 98:1130-4 D 26 '14

Prevention of overwinding and overspeeding in shafts. G. G. T. Poole. *Colliery* 36:20-2 Ag '15

Reversing rope on single-drum hoist. C. M. Rasmussen. *Eng & Min J* 99:665-6 Ap 10 '15

Silver Hill underground hoisting station. J. Humes. *il diags Eng & Min J* 100:747-51 N 6 '15

Sliding board for hoisting ropes. D. E. Charlton. *diags Eng & Min J* 100:393 S 4 '15

Spillage and sinking pocket. A. E. Hall. *diags Eng & Min J* 99:612 Ap 3 '15

Steel headframe at no. 9 shaft, Republic mine, Vulcan, Mich. F. L. Burr. *il diags Eng & Min J* 100:379-82, 430-5 S 4-11 '15

Substitute for rollers in incline. E. H. Hodgkinson. *diag Eng & Min J* 99:149-50 Ja 16 '15

Tests of large steam hoists. H. E. Spring. *Gen Elec R* 18:179-89 Mr '15

Tramming and hoisting at Copper Queen mine. G. F. G. Sherman. *il diags Am Inst Min E Bul* 105:1837-35 S '15

Underground crushing and loading arrangements. A. E. Hall. *diags Eng & Min J* 99:192-3 Ja 23 '15

Wooden or steel cages. *Colliery* 35:446 Mr '15

See also Mine haulage



**Mine inspection**

- Digest of state metal-mine inspection laws. C. B. Dutton. U S Bur Mines Bul 75:129-63 '15  
 Inspection of mines. J. L. Mullen. Colliery 35: 435 Mr '15  
 Inspection systems maintained by mining companies. L. O. Kellogg. U S Bur Mines Bul 75:246-53 '15  
 Organization of existing state mine-inspection systems. L. O. Kellogg. U S Bur Mines Bul 75:164-73 '15  
 Safety inspection system of the Susquehanna coal co. F. C. Curtis. Colliery 35:607-8 Je '15

**Mine inspectors**

- State geological and mining officials. Eng & Min J 99:104 Ja 9 '15

Mine labor. See Coal miners; Miners

Mine ladders. See Ladders

**Mine lighting**

- Illumination of mines. R. P. Burrows. II plan Am Inst Min E Bul 107:2237-45 N '15

Mine locomotives. See Locomotives, Mine

**Mine management**

- Coal mining in West Virginia. J. E. Coleman. II Sibley J 30:21-7 O '15  
 E. E. White coal company mines. G. D. Evans. II Colliery 35:401-7 Mr '15  
 Efficiency in coal mining. G. S. Brackett. Colliery 35:538-92 Je '15  
 Essentials of organization and management. J. R. Finlay. II Eng & Min J 100:171-6 Ji 31 '15  
 Handling drill steel at the Quincy mine. L. H. Goodwin. plan Eng & Min J 99:16 Ja 2 '15  
 Investments in Iron river district. C. A. Tupper. II Iron Tr R 56:759-64 Ap 15 '15  
 Labor factor in bituminous mines. G. S. Brackett. Colliery 36:99-100 S '15  
 Operations in the New River field. W. Z. Price. II Colliery 35:536-7 My '15  
 Practical economy at coal mines. L. G. Hauger. Colliery 36:128-31 O '15

See also Mine foremen

**Mine models**

- Mine model of the Broken Hill lode. II Eng & Min J 99:1076-7 Je 19 '15  
 Mine model of vertical glass plates. diags Eng & Min J 99:236-7 Ja 30 '15  
 Mine models made of celluloid sheets. M. C. Lake. diag Eng & Min J 99:737 Ap 24 '15  
 Mt Hope mine model. J. C. Stockland. II Eng & Min J 99:446 Mr 6 '15

Mine motors. See Mining machinery

Mine power. See Mining engineering—Power

**Mine pumping**

- Centrifugal mine pumps on the Rand; with cost data. E. G. Izod and A. P. Rouillard. diags Eng & Min J 99:1115-16 Je 26 '15  
 Dewatering an anthracite mine. W. Z. Price. II diags Colliery 36:87-90 S '15  
 Economical pump arrangement. H. S. Lee. diag Eng & Min J 99:281 F 6 '15  
 Mine pumping; comparison of steam and electric pumps. C. Legrand. Am Inst Min E Bul 105:1929-35 S '15

Mine railroads. See Mine ties; Mine tracks; Railroads, Industrial

Mine records. See Mine accounting

**Mine rescue work**

- Berwind-White first-aid meeting. II Colliery 35:254-5 D '14  
 Black Hawk mine fire; use of oxygen helmet apparatus. J. B. Forrester. map Colliery 36: 12-18 Ag '15  
 First-aid contest. Superior coal company. II Colliery 35:429-30 Mr '15  
 First-aid instructions for miners. M. W. Glasgow. W. A. Raudenbush, and C. O. Roberts. II U S Bur Mines Cir 8:1-64 '15  
 Layland rescue work. E. A. Henry. Eng & Min J 99:666-7 Ap 10 '15  
 Montana first aid. Colliery 36:85-6 S '15  
 Roylton mine explosion. II plan Colliery 35: 263-8 D '14  
 Self-contained rescue apparatus. J. S. Hal-dane. Colliery 36:81-3 S '15  
 Telephones for use in mine rescue work demonstrated at San Francisco. II Elec R & W Elec'n 66:830 My 1 '15

**Mine roofs**

- Stresses in the mine roof. R. D. Hall. diags Am Inst Min E Bul 105:2013-21 S '15

**Mine sanitation**

- Pulmonary disease among miners in the Joplin district, Missouri and its relation to rock dust in the mines. A. J. Lanza and E. Higgins. II maps U S Bur Mines Tech Pa 105:1-47 '15; Abstract. Eng & Min J 99:331-3 F 13 '15

See also Mine ventilation

**Mine shafts**

- Cover for shaft ladderway. D. E. Charlton. diag Eng & Min J 100:269 Ag 14 '15  
 Fireproofing mine shafts. diags Colliery 35:441-2 Mr '15  
 Fireproofing mine shafts. Eng & Min J 99: 421 F 27 '15  
 Gunite casing on wood shaft lining. S. Royce. II diags Eng & Min J 99:409-11 F 27 '15  
 Inclined shaft for timber on the Mesabi. L. D. Davenport. diags Eng & Min J 99:776-7 My 1 '15  
 Interlining a timber and steel lined shaft with a cement gun. S. Royer. diag Eng & Contr 44:278 O 6 '15  
 Reinforced-concrete shaft sets. L. D. Davenport. II plans Eng & Min J 99:447-8 Mr 6 '15  
 Simple folding shaft gate. F. T. Teddy. diag Eng & Min J 100:599-600 O 9 '15  
 Steel shaft timbering at Los Ocotes mine. R. H. Cromwell. diags Sch Mines Q 36:143-6 Ja '15; Abstract. Eng & Min J 100:302 N 13 '15  
 Use of concrete underground; methods in use in some shafts in the copper country. H. T. Mercer. diags Colliery 35:419-26 Mr '15  
 Vertical-shaft steel stairway. plan Eng & Min J 98:1002 D 5 '14  
 See also Headframes; Mine timbering; Shaft lining; Shaft sinking

**Mine shops**

- Colliery repair shops. W. Z. Price. II Colliery 35:269-71 D '14

**Mine signals**

- Automatic signal system used in stock-piling iron ore. J. F. Murphy. diags Eng & Min J 100:225 Ag 7 '15  
 Battery bell signaling in English mines. R. V. Wheeler. Elec R & W Elec'n 68:903-4 My 15 '15; Same. Elec W 65:1304 My 22 '15  
 Locked signal system in the Palmer shaft of the New Jersey zinc co.'s mine at Franklin. N. J. E. H. Hodgkinson. diags Eng & Min J 99:777-8 My 1 '15  
 Rosehall signal indicator. J. Black. diags Colliery 35:479-80 Ap '15  
 Warning bell for topman. H. A. Linke. diag Eng & Min J 99:655 Ap 10 '15  
 Winding-engine signals. W. H. Davis. II diag Colliery 36:83-5 S '15

**Mine surveying**

- Azimuth estimation from incorrect plumbing. A. E. Flynn. Eng & Min J 99:695 Ap 17 '15  
 Compass surveying. R. Bowen. Colliery 35: 417-18 Mr '15  
 Engineering notes and methods at Miami. H. P. Bowen. Eng & Min J 100:15-17 Ji 3 '15  
 Surveying in anthracite mines. W. Z. Price. diag Colliery 35:461-4, 541-3 Ap-May '15  
 Top telescope problem. F. W. Sperr. diags Colliery 35:523-6 My '15  
 Triangulating from two plumb wires. A. G. Wolf. Eng & Min J 98:1043-4 D 12 '14  
 What the dip needle can and cannot do. C. A. Cheney, Jr. Eng & Min J 100:193-4 Ji 31 '15  
 What the dip needle can and cannot do. W. O. Hotchkiss. Eng & Min J 100:363 Ag 28 '15

**Mine taxation**

- Abstracts of current decisions on mines and mining, October, 1914, to April, 1915. J. W. Thompson. U S Bur Mines Bul 101:121-5 '15  
 Harrison bill, recently defeated in the Minnesota legislature. Eng & Min J 100:877-8 N 27 '15  
 Mine taxation in Mexico. E. A. H. Tays. Eng & Min J 99:913 My 22 '15  
 New mining taxes in Mexico. Eng & Min J 100:811-12 N 13 '15  
 See also Mine valuation

- Mine temperature**  
Normal underground temperatures. Eng & Min J 100:476 S 18 '15
- Mine ties**  
Slick steel mine tie. diag Colliery 35:342-4 Ja '15  
Slick steel mine ties. 11 diags Ry R 56:438-7 Mr 27 '15  
Steel mine ties. 11 Colliery 35:380-1 F '15
- Mine timber**  
Preservation of mine timber. H. A. Appel. Colliery 35:481-3 Ap '15  
Rocky mountain mine timbers. N. de W. Betts. diag U S Agric Bul 77:1-34 '14  
United States mining statutes annotated; timber cutting for mining purposes. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1834-53 '15
- Mine timbering**  
Coal mining problem: hydraulic stowage. Engineer 118:526 D 4 '14  
Comparative timbering costs in mine and sub-way. diag Eng & Min J 100:889-90 O 23 '15  
Composite mine props. diags Colliery 35:383 F '15  
Improved chute hook. diags Eng & Min J 100:227 Ag 7 '15  
Light shaft timbering. H. A. Linke. diags Eng & Min J 99:696 Ap 17 '15  
Method of reinforcing set timbers. H. H. Hodgkinson. diag Eng & Min J 98:1001 D 5 '14  
Rock- and ore-chute door. D. E. Charlton. diag Eng & Min J 100:226-7 Ag 7 '15  
Safety in systematic timbering. W. F. Kearns. 11 plan Colliery 35:254 D '14  
Shaft timbering and headgear on the Mesabi range. diags Eng & Min J 99:1119 Je 26 '15  
Steel shaft timbering at Los Ocotos mine. R. H. Cromwell. diags Sch Mines Q 36:143-6 Ja '15; Abstract. Eng & Min J 100:802 N 13 '15  
Substantial ore chute. H. H. Hodgkinson. plan Eng & Min J 99:861-2 My 15 '15  
Timbering stopes for safety. H. H. Hodgkinson. diags Eng & Min J 99:818-20; 100:69 My 8, J1 10 '15  
Types of chutes and chute gates. A. E. Hall. diags Eng & Min J 99:788-9 Ap 24 '15  
Unique method of sinking shafts in soft ground. L. T. Emory. 11 Eng N 73:397-8 F 25 '15; Same cond. Eng & Min J 99:945-6 My 29 '15  
*See also* Headframes; Mine construction; Mine shafts
- Mine tipples**  
Lucerne power plant and tippie of the Rochester & Pittsburg coal and iron co. C. M. Young. 11 Colliery 36:1-6 Ag '15
- Mine tracks**  
Calculating diamond crossover for shaft bottom. diag Eng & Min J 100:762 N 6 '15  
Importance of good mine tracks. J. C. Edwards. Colliery 35:471-2 Ap '15  
*See also* Mine ties
- Mine valuation**  
Observations on the appraisal of the iron mines of Michigan. C. H. Baxter. Eng & Min J 99:439-40 Mr 6 '15  
Principle of coal evaluation. R. W. Coulthard. Colliery 36:22 Ag '15  
Valuation of Arizona's producing mines. Eng & Min J 100:469 S 18 '15  
Valuation of coal lands. W. E. Fohl. Colliery 36:64-6 S '15
- Mine ventilation**  
Influence moisture in the air has on mine ventilation; abstract. A. C. Whitcome. Am Soc M E J 87:563-4 S '15  
Pressure ventilating system used in Cripple Creek mines. S. A. Worcester. diags Eng & Min J 99:981-5 Je 5 '15  
Reversing main air-currents. W. Clifford. diags Colliery 35:544-5 My '15  
Running a fan economically. Colliery 35:398 F '15  
Testing of ventilating fans. T. Bryson. Colliery 35:465-7 Ap '15; Abstract. Am Soc M E J 87:124 F '15  
Ventilating a dead heading. P. Ruth, jr. plan Eng & Min J 100:226 Ag 7 '15
- Ventilation of the Copper Queen mine. C: A. Mitke. diags Am Inst Min E Bul 105:1941-53 S '15; Discussion. 108:2477-8 D '15**  
*See also* Mine air
- Mine water**  
Comparison of the water of Sulphur Springs with deep well and mine waters. C. E. Siebenthal. Econ Geol 9:762-3 D '14  
Composition of waters in mines of sulphide ores. E. T. Hodge. Econ Geol 10:123-39 F '15  
*See also* Mine dams; Mine drainage
- Mineral industries**  
American smelting and refining co.; abstract of the annual report for 1914. Eng & Min J 99:582-3 Mr 27 '15  
British mineral statistics. Engineer 119:249-50 Mr 12 '15  
Doing without Europe. Sci Am 112:128, 157+ F 6-13 '15  
Foreign mineral trade of Great Britain. Eng & Min J 99:442 Mr 6 '15  
Mineral-industry exhibit at the National museum. C. G. Gilbert. 11 Eng & Min J 100:470-2 S 18 '15  
*See also* Metal trade; Metallurgy; Mines and mineral resources; Mining industry and finance; also names of particular industries, e. g. Iron industry and trade
- Mineral lands**  
Abstracts of current decisions on mines and mining, December, 1913, to September, 1914. J. W. Thompson. U S Bur Mines Bul 90:1-11, 24-48, 131-53 '15  
Abstracts of current decisions on mines and mining, October, 1914, to April, 1915. J. W. Thompson. U S Bur Mines Bul 101:1-136 '15  
Acquiring placer-mining claims in British Columbia. J. A. Macdonald. diag Eng & Min J 100:757-9 N 6 '15  
Conflicts between placer patents and lode claims. A. L. H. Street. Eng & Min J 99:736 Ap 24 '15  
Forest service and the prospector. L. A. Palmer. Colliery 35:511+ Ap '15  
Forfeiture of co-owner's interest in claim. A. L. H. Street. Eng & Min J 100:570 O 2 '15  
Forfeiture of placer locations. A. L. H. Street. Eng & Min J 100:224 Ag 7 '15  
Nature of title to mine claims. A. L. H. Street. Eng & Min J 100:668-7 O 23 '15  
Prospecting for minerals in Ontario. J. A. Macdonald. Eng & Min J 99:1087-8 Je 19 '15  
Relocation of mining claims. A. L. H. Street. Eng & Min J 100:227 Ag 7 '15  
Right of a mining or ore-milling company to condemn land. A. L. H. Street. Eng & Min J 100:757 N 6 '15  
Sliding royalties for oil and gas wells. R. H. Johnson. Am Inst Min E Bul 102:1292-4 Je '15; Discussion. 108:2423-5 D '15  
Staking out mineral claims in Ontario. J. A. Macdonald. diag Eng & Min J 99:324-5 F 13 '15  
United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:1-1772 '15  
*See also* Coal lands; Mines and mineral resources; Ore deposits
- Mineral oils. See Petroleum**
- Mineral resources. See Mines and mineral resources**
- Mineral springs. See Mineral waters**
- Mineral waters**  
Spring deposits at Sulphur Springs, Ark. C. E. Siebenthal. Econ Geol 9:758-67 D '14
- Mineralogy**  
Origin and occurrence of certain crystallographic intergrowths. J. Segall. 2 pls Econ Geol 10:462-70 J1 '15  
Tables for the determination of gems and precious or ornamental stones without injury to the specimen. A. J. Moses. Sch Mines Q 36:199-232 Ap '15  
*See also* Abrasives; Assaying; Crystallography; Earths, Rare; Geology; Metals; Mines and mineral resources; Rocks; Stone; also names of minerals, e. g. Coal
- Minerals. See Mineral lands; Mineralogy; Mines and mineral resources**

**Miners**

Ancient gold mining in East Africa; extracts from Diodorus the Sicilian. A. B. Coll. Eng & Min J 99:1041-2 Je 12 '15  
 Arizona copper miners' strike. II Eng & Min J 100:805-7 O 9 '15  
 Change in character of mining communities. Colliery 35:587 Je '15  
 Government ownership and the miner. E. L. Bailey. Colliery 35:480-1 Ap '15  
 Miners' wages again. Engineer 120:228-9 S 3 '15  
 Nystagmus (trembling of the eyes) of the miners. Colliery 35:505 Ap '15  
 Phthisis conditions on the Rand. A. C. Key. Eng & Min J 99:28-9 Ja 2 '15  
 Pulmonary disease among miners in the Joplin district, Missouri and its relation to rock dust in the mines. A. J. Lanza and E. Higgins. II maps U S Bur Mines Tech Pa 106:1-47 '15; Abstract. Eng & Min J 99:331-3 F 13 '15  
 Strike situation in Arizona. II Eng & Min J 100:781-3 O 30 '15  
*See also* Coal miners; Mine rescue work; Mining towns

**Miners' houses**

Steel and concrete mine houses. diag. plan Eng & Min J 99:987-8 Je 5 '15

Mines, Bureau of. *See* United States—Mines, Bureau of

**Mines, Military**

Mining and countermining of fortifications. II Sci Am 111:484-5 D 5 '14

*See also* Mines, Submarine

**Mines, Submarine**

Mines in the North sea. II Sci Am 111:489 D 12 '14

Observation mines for harbor protection. II Sci Am 113:480 N 13 '15

Sinker of the Bouvet, Irresistible and Ocean? II Sci Am 112:402 My 1 '15

Submarine mines; their design and their manner of functioning. J. Huber. diag. Eng M 50:180-1 O '15

Swimming mine. diag. Eng M 50:122 O '15

**Mines and mineral resources**

Data of the world's principal mines. S. F. Shaw. Eng & Min J 99:84-5 Ja 9 '15

World's mineral reserves. E. C. Ekel. Eng M 48:658-66 F '15

*See also* Coal mines and mining; Copper mines and mining; Geology; Gold mines and mining; Hydraulic mining; Iron mines and mining; Lead mines and mining; Magnesite; Meerschaut; Mercury; Metals; Mine fires; Mine management; Mine surveying; Mine ventilation; Mineral lands; Mineralogy; Miners; Mining engineering; Mining laws; Mining machinery; Molybdenite; Monazite; Ore deposits; Petroleum; Phosphates; Prospecting; Quarries and quarrying; Salt; Shaft sinking; Silver mines and mining; Sulphur; Tin mines and mining; Zinc mines and mining

**Exhibitions**

Panama-Pacific exposition. II plan Colliery 35: 657-68 Jl '15

**Alaska**

Alaskan mining in 1914. Eng & Min J 99:116-19 Ja 9 '15

Kenai district, Alaska. Eng & Min J 100:676 O 23 '15

Stopping methods at Fairbanks. H. I. Ellis. II Eng & Min J 100:508-6 S 25 '15

*See also* Coal mines and mining—Alaska; Gold mines and mining—Alaska; Petroleum—Alaska

**Arizona**

Arizona in 1914. map Eng & Min J 99:105-7 Ja 9 '15

*See also* Copper mines and mining

**Australia**

Cloncurry copper district, Queensland. W. H. Corbould. diag. Am Inst Min E Bul 97:83-92 Ja '15

State assistance to the mining industry in Australia. Eng & Min J 100:445 S 11 '15

**Bolivia**

Mining in Bolivia. H. L. Venables. Eng & Min J 99:662 Ap 10 '15

Ownership of Bolivian mines. M. G. F. Söhllein. Eng & Min J 99:459 Mr 6 '15

*See also* Gold mines and mining—Bolivia; Tin mines and mining

**British Columbia**

Mining in British Columbia in 1914. Eng & Min J 99:121 Ja 9 '15

*See also* Coal mines and mining—British Columbia

**Burma**

Bawdwin mines of the Burma corporation. II map plan Eng & Min J 99:177-80 Ja 23 '15

Wolframite in lower Burma. E. M. Lefroy. Eng & Min J 99:684 Ap 17 '15

**California**

Mining in California in 1914. L. H. Eddy. Eng & Min J 99:107 Ja 9 '15

Pocket deposits of the Klamath mountains, California. H. G. Ferguson. II maps Econ Geol 10:241-61 Ap '15

Seneca mining district, California. W. H. Wright. II map Eng & Min J 99:1072-4 Je 19 '15

*See also* Petroleum—California

**Canada**

Mineral production of Canada. J. McLeish. Eng & Min J 99:488-9 Mr 13 '15

*See also* Coal mines and mining—Canada

**Central America**

Central America in 1914. Eng & Min J 99:124-5 Ja 9 '15

**Chile**

Smelting at Panulicillo, Chile. II Eng & Min J 100:787-9 N 13 '15

*See also* Copper mines and mining; Gold mines and mining—Chile; Iron mines and mining—Chile; Petroleum—Chile; Potash

**China**

Mining conditions in China. F. L. Garrison. Eng & Min J 100:26-8 Jl 3 '15

*See also* Iron mines and mining—China

**Colorado**

Metal mining in Colorado in 1914. G. E. Collins. Eng & Min J 99:108-9 Ja 9 '15

Mining in Boulder county, Colo. Eng & Min J 100:797-8 N 13 '15

Ores of Gilpin county, Colorado. E. S. Bastin. II Econ Geol 10:262-91 Ap '15

*See also* Gold mines and mining—Colorado

**Dominican republic**

Minerals of Santo Domingo. F. L. Garrison. Eng & Min J 99:641-4 Ap 10 '15

**Great Britain**

Mineral production of Great Britain. Eng & Min J 100:6 Jl 3 '15

**Idaho**

Idaho mining industry in 1914. R. N. Bell. Eng & Min J 99:109 Ja 9 '15

Metallurgy in the Coeur d'Alenes. H. A. McGraw. II Eng & Min J 100:827-30 N 20 '15

New developments in the Coeur d'Alene, Idaho. H. I. Ellis. II Eng & Min J 100:337-40 Ag 28 '15

**India**

British India. U S Sp Cons Rep 72:413-23 '15

**Italy**

Mineral output of Italy in 1913. Eng & Min J 99:690 Ap 17 '15

**Kentucky**

*See* Coal mines and mining—Kentucky; Petroleum—Kentucky

**Kongo, Belgian**

Economic geology of the Belgian Congo, Central Africa. S. H. Ball and M. K. Shaler. II map Econ Geol 9:605-63 O '14; Excerpts. Eng & Min J 99:608-11 Ap 3 '15

Katanga increasing its output. R. Williams. Eng & Min J 100:808 Ag 21 '15

## Mines and mineral resources—Continued

## Mexico

Lost mines. G. L. Sheldon. Eng & Min J 99: 746-8 Ap 24 '15

Main mineral zone of the Santa Eulalia district, Chihuahua. B. Prescott. diag map Am Inst Min E Bul 98:155-98 F '15

Mining in Baja California. Eng & Min J 99: 188-9 Ja 23 '15

Mining in Mexico in 1914. Eng & Min J 99:122-4 Ja 9 '15

See also Petroleum—Mexico

## Minnesota

See Iron mines and mining—Minnesota

## Montana

Mineral county, Montana, mining notes. H. I. Ellis. Eng & Min J 100:895-6 N 27 '15

Mining in Montana in 1914. T. Simons. Eng & Min J 99:110 Ja 9 '15

Occurrence of covellite at Butte, Mont. A. P. Thompson. Il Am Inst Min E Bul 100:645-77 Ap '15; Discussion. 108:2464-71 D '15

See also Coal mines and mining—Montana; Geology—Montana; Petroleum—Montana

## Nevada

Mining in Nevada in 1914. Eng & Min J 99: 111-12 Ja 9 '15

See also Gold mines and mining—Nevada

## New Mexico

New Mexico in 1914. Eng & Min J 99:112-13 Ja 9 '15

Pinos Altos district, New Mexico. I. L. Wright. Il Eng & Min J 99:133-5 Ja 16 '15

## Newfoundland

Newfoundland's mineral resources. P. B. McDonald. map Eng & Min J 100:674-5 O 23 '15

## Norway

Copper discovery in Norway. A. D. Udhany. Eng & Min J 99:322 F 13 '15

Grong copper and pyrites mines of Norway. A. D. Udhany. Il map Eng & Min J 99:889-92 My 22 '15

## Oklahoma

Copper deposits in the Red Beds of southwestern Oklahoma. A. E. Fath. Il Econ Geol 10:140-50 F '15

See also Coal mines and mining—Oklahoma; Petroleum—Oklahoma

## Ontario

Certain mineral occurrences in the Worthington mine, Sudbury, Ontario, and their significance. T. L. Walker. Il map Econ Geol 10:536-42 S '15

Mining in Ontario in 1914. T. W. Gibson. Eng & Min J 99:120-1 Ja 9 '15

## Oregon

Oregon mining in 1914. W. B. Hartley. Eng & Min J 99:114 Ja 9 '15

## Pennsylvania

See Coal mines and mining—Pennsylvania

## Peru

Romantic story of vanadium. C. J. Stark. Il Iron Tr R 57:781-4+ O 21 '15

## Poland

Mines and smelting works of Poland. Il map Eng & Min J 99:146-8 Ja 16 '15

## Russia

Kyshtim corporation and the effect of the war. Eng & Min J 100:770 N 6 '15

Mining in the Caucasus mountains. L. C. David. Il Eng & Min J 99:681-3 Ap 17 '15

See also Gold mines and mining—Russia

## Santo Domingo

Copper deposits of San Cristobal. T. F. Donnelly. bibliog Il Am Inst Min E Bul 104: 1759-68 Ag '15; Discussion. 108:2473-4 D '15

## Sardinia

Calamine mines of Sardinia. C. W. Wright. Il map Eng & Min J 100:625-8 O 16 '15

Gennamari mill, Sardinia. C. W. Wright. diags Eng & Min J 100:794-6 N 13 '15

## Siberia

Ridder mine of the Irtysh corporation. Il map Eng & Min J 99:599-603 Ap 3 '15

See also Gold mines and mining—Siberia

## South Africa

Mining conditions on the Witwatersrand. W. L. Honnold. diags Am Inst Min E Bul 104:1601-21 Ag '15

Mining in the Transvaal in 1914. H. F. Marriott. Eng & Min J 99:131-2 Ja 9 '15

Mining on the Witwatersrand. Il Eng & Min J 100:320-2 Ag 21 '15

## South America

South America in 1914. maps Eng & Min J 99:125-30 Ja 9 '15

See also Coal mines and mining—South America

## South Dakota

Mining in South Dakota in 1914. J. Simmons. Eng & Min J 99:113-14 Ja 9 '15

## Spitzbergen

See Coal mines and mining—Spitzbergen

## Texas

See Petroleum—Texas; Potash

## Turkey

Minerals of Asiatic Turkey. map Eng & Min J 100:715-17 O 30 '15

## United States

Barite of the Appalachian states. T. L. Watson and J. S. Grasty. bibliog Il diags maps Am Inst Min E Bul 98:345-90 F '15

Developing our resources. G. O. Smith. Metal War 83:533 Ap 9 '15

Occurrence of anhydrite in the United States. A. F. Rogers. Il Sch Mines Q 36:123-42 Ja '15

War and our metals. L. O. Kellogg. Eng M 49: 18-27 Ap '15

See also Potash

## Uruguay

Mining industry in Uruguay. R. Marstrander. Eng & Min J 99:484 Mr 13 '15

## Utah

Alta activities. Il Eng & Min J 99:689-90 Ap 17 '15

Metallurgical treatment of the low-grade and complex ores of Utah. D. A. Lyon, R. H. Bradford, S. S. Arentz, O. C. Raiston, and C. L. Larson. U S Bur Mines Tech Pa. 90: 1-39 '15

Mining in Utah in 1914. E. R. Zalinski. Eng & Min J 99:115-16 Ja 9 '15

See also Geology—Utah

## Wisconsin

See Zinc mines and mining

## Mineville, New York

Housing and sanitation at Mineville. S. Leffevre. Il diags plans Am Inst Min E Bul 98: 227-38 F '15

## Minimum wage

Failure of legislative minimum wage. Am Ind 15:11-12 Je '15

Miners' minimum wage in Yorkshire. Engineer 119:66-7 Ja 15 '15

Mining, Hydraulic. See Hydraulic mining

## Mining camps

Mine messhouse operation. Eng & Min J 100: 104 Jl 17 '15

Mining claims. See Mineral lands

## Mining companies

Abstracts of current decisions on mines and mining, December, 1913, to September, 1914. J. W. Thompson. U S Bur Mines Bul 90: 12-23 '15

Abstracts of current decisions on mines and mining, October, 1914, to April, 1915. J. W. Thompson. U S Bur Mines Bul 101:16-24 '15

**Mining companies—Continued**

List of companies in North and Central America with financial statistics. Eng & Min J 100:129-30 JI 17 '15  
 United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94: pt 2, 914-15 '15

See also Tonopah mining companies

**Mining costs**

Basic principles of mining cost. J. R. Finlay. Sch Mines Q 36:193-8 Ap '15; Same. Eng & Min J 100:878-80 N 27 '15  
 Centrifugal mine pumps on the Rand. E. G. Izod and A. P. Rouillard. diags Eng & Min J 99:1115-16 Je 26 '15  
 Churn-drilling costs. C. H. Palmer, jr.; H. P. Bowen. Eng & Min J 99:20-1 Ja 2 '15  
 Comparative costs of operating. G. S. Brackett. Colliery 26:132-4 O '15  
 Cost of an ounce of gold. P. E. Barbour. Eng & Min J 100:49-50 JI 10 '15  
 Cost of drilling with well drilling machines in ore prospecting. C. H. Palmer, jr. Eng & Contr 48:203-9 Mr 3 '15  
 Cost of initial mining excavations. E. D. Gardner. Assn Eng Soc J 54:310-19 My '15  
 Cost of mine openings. E. D. Gardner. Eng & Min J 100:791-4 N 13 '15  
 Cost of mining in Alaska. Eng & Min J 100: 430-1 S 18 '15  
 Cost of producing lead. Eng & Min J 98:1073-4 D 19 '14  
 Cost of sinking 900-ft. shaft. H. A. Linke. diags Eng & Min J 100:845-7 N 20 '15  
 Details of costs at El Tigre. Eng & Min J 98: 1047 D 12 '14  
 Hollinger mining and milling costs. Eng & Min J 99:908 My 23 '15  
 Milling at the Nipissing mines co. Eng & Min J 99:1124 Je 26 '15  
 Mining costs at Goldfield. Eng & Min J 99:909 My 22 '15  
 Operating costs at a small Mexican mine. R. H. Allen. Eng & Min J 99:1122-4 Je 26 '15  
 Reduction of Rand costs. Eng & Min J 99: 896 My 23 '15  
 Stopping costs at iron mines, Mineville, N. Y. Eng & Min J 100:847 N 20 '15  
 Tests of large steam hoists. H. E. Spring. Gen Elec R 13:179-89 Mr '15  
 Tonopah Belmont mine. Eng & Min J 100:272 Ag 14 '15  
 Why anthracite mining is expensive. Colliery 35:283 D '14

See also Drilling and boring (earth and rocks)—Cost; Mine haulage—Cost

**Mining debris**

United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94: pt 2, 933-45 '15

Mining dividends. See Mining industry and finance

**Mining engineering**

Backstopping with breast holes. H. K. Sherry. II Eng & Min J 100:354 Ag 28 '15  
 Coal stripping in Illinois. II Colliery 36:69-72 S '15  
 Develop nation's oldest iron mine: Empire steel & iron co.'s Mount Hope properties. H. M. Roche and J. C. Stoddard. II plans Iron Tr R 57:171-6+ JI 22 '15  
 Drifting with a stoper. G. E. Wolcott. diags Eng & Min J 99:860 My 15 '15  
 Earth tremors on the Rand. A. C. Key. Eng & Min J 100:833-4 N 20 '15  
 Elderlinsky gold mines. N. T. Truschkoff. II Eng & Min J 99:1017-21 Je 12 '15  
 Five-hole cut. Eng & Min J 99:1083 Je 19 '15  
 Five-hole cut. H. A. Morrison. diags Eng & Min J 99:956 My 29 '15  
 Institution of mining engineers general meeting in London, June 10. Engineer 119:610-11 Je 18 '15  
 Limits of mining under heavy wash. D. Bunting. diags plan Am Inst Min E Bul 97:1-21 Ja '15; Discussion. 101:1187-9 My '15  
 Mining camp without a peer: revolutionary methods at Bingham. U. G. F. Stratton. II Sci Am S 80:241+ O 16 '15  
 Mining in the Caucasus mountains. L. C. David. II Eng & Min J 99:681-3 Ap 17 '15

Mining low-grade copper ore by Ray Consolidated. A. N. Penny. diags Eng & Min J 99: 767-70 My 1 '15

Mining methods at Park City, Utah. J. Humes. map Am Inst Min E Bul 98:479-81 F '15

Mining methods of the Arizona copper co. F. B. Scotland. diags plans Am Inst Min E Bul 98:483-86 F '15

Mining methods on Gogebic range. O. E. Olson, O. M. Schaus and F. Blackwell. diags Iron Tr R 57:735-7 O 14 '15

Mining ore from a caved stope. J. E. Harding. diags Eng & Min J 100:71-3 JI 10 '15

Mother Lode blast. F. S. Norcross, jr. II Eng & Min J 99:931-5 My 29 '15; Abstract. Eng M 49:930-3 S '15

Notes on shrinkage stopping. E. H. Dickenson and H. J. Volker. diags Eng & Min J 100: 875-7 N 27 '15

Oxyacetylene welding in mining. II diags Eng & Min J 99:393-7 F 27 '15

Packs, sand filling and solid pillars. Eng & Min J 100:393-4 S 4 '15

Primer on explosives for metal miners and quarrymen. C. M. Munroe and C. Hall. diags pls U S Bur Mines Bul 80:1-117 '15

Removing ore under timbered drift. H. H. Hodgkinson. diags Eng & Min J 99:657 Ap 10 '15

Sand filling. Eng & Min J 99:862 My 15 '15

Stopping methods at Fairbanks. H. I. Ellis. II Eng & Min J 100:503-6 S 25 '15

Tom Hunter, hoisting engineer. W. O. Rogers. II Power 39:46-8, 236-8, 372-4; 40:922-4; 42: 678-80 Ja 13, F 17, Mr 17, D 29 '14, N 18 '15

Underground crushing and loading arrangements. A. E. Hall. diags Eng & Min J 99: 192-3 Ja 23 '15

Underground mining systems of Ray consolidated copper co. L. A. Blackner. II diags Am Inst Min E Bul 102:1249-90 Je '15

Wisconsin zinc district. H. C. George. II Eng & Min J 100:341-4 Ag 28 '15

See also Blasting; Coal mines and mining; Drilling and boring (earth and rocks); Electricity in mining; Hydraulic mining; Iron mines and mining; Mine construction; Mine drainage; Mine haulage; Mine hoisting; Mine management; Mine shafts; Mine shops; Mine surveying; Mine timbering; Mine ventilation; Mines and mineral resources; Mining engineers; Mining machinery; Mining schools and education; Rock drills; Shaft sinking; Tunnels

**Classification**

Indexing and filing technical literature. A. R. Kenner. Eng & Min J 99:851-6 My 15 '15

**Examinations**

Answers to examination questions for mine foreman and fire boss in various states in 1914. Colliery 35:447-50 Mr '15

Answers to examination questions for mine foreman and fire boss in various states in 1915. Colliery 36:163-5 O '15

Questions selected from those asked at an examination for mine foreman, held in Price, Utah, September 15 and 16, 1914. Colliery 35: 217-20, 276-9, 338-41 N '14-Ja '15

Questions selected from those asked at examinations for mine foreman and fire boss in various states in 1915. Colliery 36:50+, 105-7 Ag-S '15

**Power**

Electric power in South Wales collieries. Elec R & W Elec'n 67:754 O 23 '15

Electrical plant of the Wakefield iron co., Wakefield, Mich. H. I. Pearl and J. Green. II plan Eng & Min J 100:349-51 Ag 28 '15

Gas producers and concentration of power at mines. R. H. Fernald. Colliery 35:415-17 Mr '15

Hydro-electric and compressor plants at Chapin mine. L. E. Ives. Eng & Min J 99:914 My 22 '15

Power supply of the Central mining-Rand mines group. J. H. Rider. II diags Inst E E J 53:509-32; Discussion. 53:633-40, 736-43, 838-43 My 1-15, Je 15 '15

Rossmore, Pa., power plant. II Colliery 35:633-6 JI '15

**Mining engineering—Power—Continued**

Tom Hunter, hoisting engineer. W. O. Rogers. *Il Power* 30:322-4; 41:150-2; 42:548-50 D 29 '14, F 2, O 13 '15  
 Wood as a fuel for mine power plants. E. A. Holbrook. *diags Eng & Min J* 99:645-7 Ap 10 '15

**Safety measures**

Accident prevention by the New Jersey zinc co. B. F. Tillson. *Eng & Min J* 98:1054-9 D 12 '14  
 Electric shot firing in Oklahoma. Colliery 35:408-9 Mr '15  
 Electrical equipment rules. Colliery 35:678-+ J1 '15  
 Finger guard on tram car. A. E. Hall. *diag Eng & Min J* 100:475 S 18 '15  
 Improved safety door for dump. H. H. Hodgkinson. *diags Eng & Min J* 100:436 S 11 '15  
 Permissible explosion-proof electric motors for mines; conditions and requirements for test and approval. H. H. Clark. *Il U S Bur Mines Tech Pa* 101:1-14 '15  
 Prevention of overwinding and overspeeding in shafts. G. G. T. Polle. *Colliery* 36:20-2 Ag '15  
 Respirators vs. water sprays. *Eng & Min J* 100:856-7 N 20 '15  
 Safeguarding the use of mining machinery. F. H. Kneeland. *Am Inst Min E Bul* 97:61-5 Ja '15; Discussion. 101:1073-4 My '15  
 Safety around surface tracks. *Eng & Min J* 99:279-80 F 6 '15  
 Safety rules for Wisconsin zinc mines. *Eng & Min J* 99:24-6 Ja 2 '15  
 Tentative mine-safety rules in California. L. H. Eddy. *Eng & Min J* 99:1048-4 Je 12 '15

*See also* Coal mines and mining—Safety measures; Mine signals; Mining laws; Safety lamps

**Mining engineers**

American institute of mining engineers; officers, members, rules, etc. *Am Inst Min E Bul* 101:supl-190 My '15  
 Directory of engineers. *Eng & Min J* 99:sup 32-8 Ja 16 '15  
 Engineer's life. A. R. Ledoux. *Eng M* 49:742-3 Ag '15

**Mining industry and finance**

Chronology of mining for 1914. *Eng & Min J* 99:86-8 Ja 9 '15  
 Company reports. *Eng & Min J* 99:197-9; 100:63-5 Ja 23, J1 10 '15  
 Data of the world's principal mines. S. F. Shaw. *Eng & Min J* 99:84-5 Ja 9 '15  
 First move; mining engineers as organizers. W. G. Swart. *Eng & Min J* 98:164-5 Ja 16 '15  
 How to write mining prospectuses; satire. *Eng & Min J* 99:183-4 Ja 23 '15  
 Influence of the European war on the mining industry of Dutch Guiana. F. B. Percival. *Eng & Min J* 99:415 Mr 6 '15  
 Mine and metallurgical construction in 1914. *Eng & Min J* 99:78-80 Ja 9 '15  
 Mining dividends in 1914. *Eng & Min J* 99:81-4 Ja 9 '15  
 Ore reserves of the Rand. A. C. Key. *Eng & Min J* 100:139-40 J1 24 '15  
 Production of minerals and metals in 1914. *Eng & Min J* 99:45-77 Ja 9 '15  
 Scandinavian mining and metallurgical notes. *Eng & Min J* 99:630-1 Mr 20 '15

*See also* Mine accounting; Mine valuation; Mining costs

Mining Institute, Canadian. *See* Canadian mining institute

**Mining institutes**

Mining institute meetings: winter meetings of the Illinois coal mining institute, the Coal mining institute of America, and the Kentucky mining institute. *Colliery* 35:325-30 Ja '15

*See also* Lake Superior mining institute

**Mining laboratories**

Mining laboratory of the Missouri School of mines. C. R. Forbes. *Il plan Eng & Min J* 99:809-11 F 13 '15

**Mining laws**

Abstracts of current decisions on mines and mining, December, 1913, to September, 1914. J. W. Thompson. *U S Bur Mines Bul* 90:1-175 '15

Abstracts of current decisions on mines and mining, October, 1914, to April, 1915. J. W. Thompson. *U S Bur Mines Bul* 101:1-136 '15  
 Apex litigation at Tonopah. *diags map, Eng & Min J* 99:660-1, 897-8 Ap 10, My 22 '15  
 Application of the apex law at Wardner, Idaho. F. T. Greene. *diags Am Inst Min E Bul* 101:911-18 My '15  
 Arizona mining legislation. *Eng & Min J* 99:611 Ap 3 '15  
 Defects of the United States mining law. C. De Kaib. *Am Inst Min E Bul* 98:831-7 F '15; Discussion. 101:1201-3; 103:1462-6 My, J1 '15  
 More Mexican mining law. *Eng & Min J* 100:638 O 23 '15  
 New mining edict in Mexico. *Eng & Min J* 99:668-9 Ap 10 '15  
 Opinions and laws with regard to health conditions in foreign mines. A. J. Lanza and E. Higgins. *U S Bur Mines Tech Pa* 105:44-7 '15  
 Requirements for prospecting dredging ground in the Yukon. J. A. Macdonald. *Eng & Min J* 99:828-9 My 8 '15  
 Revision of mining laws urged. H. V. Winchell. *Eng & Min J* 100:239 Ag 7 '15  
 Rules and regulations for metal mines. W. R. Ingalls and others. *U S Bur Mines Bul* 75:1-288 '15  
 Russian mining laws protect the worker. L. C. David. *Eng & Min J* 100:51 J1 10 '15  
 Staking out mineral claims in Ontario. J. A. Macdonald. *diag Eng & Min J* 99:324-5 F 13 '15  
 United States mining statutes annotated. J. W. Thompson. *U S Bur Mines Bul* 94:1-1772 '15  
 Validity of statute regulating coal mines. *Colliery* 35:268 D '14  
 Yukon placer mining regulations. J. A. Macdonald. *Eng & Min J* 99:156-7 Ja 16 '15

*See also* Mine taxation; Mineral lands

**Mining machinery**

Hydraulic mining cartridge. J. Tonge. *Il diags Sci Am S* 79:156-8 Mr 6 '15  
 Manganese-steel castings in the mining industry. W. S. McKee. *Il diag Am Inst Min E Bul* 108:2309-411 D '15; Same. *Iron Tr R* 57:1077-81 D 2 '15  
 Men and machinery of the Comstock—the combination shaft. G. W. Dickie. *Il Eng & Min J* 98:990-4 D 5 '14  
 Mine motors, with special reference to electric motors. E. Drennen. *Colliery* 35:241-5 D '14  
 Multistage centrifugal and Cornish pumps in Chapin mine. L. E. Ives. *Il diag Eng & Min J* 99:867-8 My 15 '15  
 Safeguarding the use of mining machinery. F. H. Kneeland. *Am Inst Min E Bul* 97:61-5 Ja '15; Discussion. 101:1073-4 My '15  
 Use and abuse of oil at mines. C. T. Thomsen. *Colliery* 35:665-8 J1 '15  
 Use of electricity in mining work. D. B. Rushmore. *Il Gen Elec R* 18:527-39 Je '15

*See also* Conveying machinery; Electricity in mining; Excavating machinery; Hoisting machinery; Mine hoisting; Rock drills; Shoveling machines; Steam shovels

**Mining prospectuses**

How to write mining prospectuses; satire. *Eng & Min J* 99:183-4 Ja 23 '15

**Mining schools and education**

Address at testimonial dinner. H. S. Munroe. *Eng & Min J* 99:998-1001 Je 5 '15  
 New era in mining education. C. F. Willis. *Eng & Min J* 99:1128 Je 26 '15  
 School of mines in South Wales. *Il Colliery* 35:249-51 D '14

*See also* Mining laboratories

**Mining terms**

Abstracts of current decisions on mines and mining, October, 1914, to April, 1915. J. W. Thompson. *U S Bur Mines Bul* 101:13-16 '15

**Mining towns**

Anaconda's community experiment. *Il Eng & Min J* 100:880-1 N 27 '15  
 Housing and sanitation at Mineville. S. Leffevre. *Il diags plans Am Inst Min E Bul* 98:227-38 F '15

**Mining towns—Continued**

- Plucking the goose as town policy. Eng & Min J 100:877-8 N 27 '15  
 Social improvement at Lead, S. D. Eng & Min J 190:798-9 N 13 '15

See also Miners' houses

**Minneapolis, Minnesota****Railroads**

- Track depression at Minneapolis. diag Eng N 73:514-17 Mr 18 '15  
 Track depression work of the C. M. & St. P. Ry. at Minneapolis. Il Ry R 57:69-72 Jl 17 '15

**Water supply**

- Minneapolis loses filter infringement suit. Eng Rec 72:191 Ag 14 '15  
 Minneapolis, St. Paul & Sault Ste. Marie railway  
 Twenty-seventh annual report. map Ry Age 59:586, 926-6 N 12 '15  
 Minneapolis Institute of arts  
 Beginnings of the recently opened Institute of arts. B. H. Hewitt. Am Inst Arch J 3: 85-6 F '15  
 Minnesota electrical association  
 8th annual convention, St. Paul, March 23-25. Elec R & W Elec'n 66:537-41 Ap 3 '15  
 Minnesota electrical contractors' association  
 Semi-annual convention, Minneapolis, Minn., Jan. 27. Elec R & W Elec'n 66:246 F 6 '15  
 Minnesota state association of master plumbers  
 20th annual convention, St. Paul, Feb. 23-24. Dom Eng 70:278-80 F 27 '15

**Mirrors**

- French process for electroplating mirrors with copper. Il Elec R & W Elec'n 66:922-3 My 15 '15  
 Protecting silvered mirrors by copper plating. Il diag Sci Am S 79:28 Ja 9 '15

**Mississippi delta**

- Continual subsidence of the Mississippi delta. E. L. Cortrell. Eng N 73:597 Mr 25 '15

**Mississippi river**

- Experimental Mississippi river levees indicate possibility of eliminating seepage. C. O. Sherrill. Il plan Eng Rec 71:562-4 My 1 '15  
 Methods of creating and maintaining channels at mouths of fluvial and tidal rivers. E. L. Cortrell. Eng Rec 71:42 Ja 9 '15  
 Mississippi river problem. G. B. Cleveland, Jr. Sci Am 112:33 Ja 23 '15  
 Mississippi river; written for the new International encyclopedia. J. W. Woermann. bibliog Assn Eng Soc J 55:37-66 S '15  
 Plans for a typical condition of Mississippi bottom land drainage. map Eng & Contr 43: 490-1 Je 2 '15  
 Port improvements along the Mississippi and Ohio rivers. Eng N 73:1066-8 Je 3 '15  
 Water terminals on the Mississippi river. Eng N 73:507 Mr 11 '15

**Missouri, Kansas & Texas railroad**

- Statistics for the fiscal year ended June 30, 1914. Ry Age 58:82-3 Ja 15 '15

**Missouri Pacific railroad**

- Abstract of annual report. map Ry Age 59: 793-5 O 29 '15  
 Semi-centennial of the Missouri Pacific. Ry R 57:433 O 2 '15

**Missouri public utilities association**

- Convention cruise, May 27-30. Elec R & W Elec'n 66:1052-4 Je 5 '15

**Missouri river**

- Missouri river improvement work may be stopped. H. Deakyn. Eng N 74:409 Ag 26 '15  
 Missouri river navigation. Eng N 74:561-2 S 16 '15

- Proposed Missouri-Meramec river hydro-electric power development: committee report. Assn Eng Soc J 55:32-6 Jl '15

**Missouri School of mines**

- Mining laboratory of the Missouri School of mines. C. R. Forbes. Il plan Eng & Min J 89:308-11 F 13 '15

**Mitchell, Mt.**

- Destroying Mt. Mitchell. R. Pullman. Il Am For 21:82-93 F '15

- Mt. Mitchell trail. H. W. Plummer and N. Buckner. Il Am For 21:94-9 F '15

Mnemonic symbols. See Symbols, Mnemonic

**Model towns**

- Details of an interesting plan for developing a large community settlement. Il Iron Tr R 57:98 Jl 8 '15  
 Factory city beautiful at low cost. Badin, N. C. Il plans Iron Age 95:782-6 Ap 8 '15  
 Model city near new steel plant; Morgan Park. R. V. Sawhill. Il plan Iron Tr R 57:647-9 S 30 '15

**Modeling**

See also Plaster casts

**Models**

- Model experiments and the forms of empirical equations. E. Buckingham. Am Soc M E J 37:531-2; Discussion. 37:532-4 S '15  
 Model record of distribution of construction plant. Il Eng N 74:218-19 Jl 29 '15  
 Models, properly designed, show correctly performance of dams and turbines. B. F. Groat. Eng Rec 72:377-8 S 25 '15  
 See also Locomotives—Models; Mine models; Panama canal—Model

**Models, Geographical**

- Table-top geography; hints on the construction of simple models. P. Collins. Il Sci Am 113:270 Mr 20 '15

Models, Mine. See Mine models

**Mohair**

- Mohair fabric. Il Textile World 49:571 Ag '15

Moisture of the air. See Humidity

Molding. See Foundry practice

**Molding machines**

- Automatic molding machine. Il Iron Age 95: 241 Ja 28 '15  
 B and B molding machine. Il Metal Ind n s 13:296 Jl '15  
 Compressed air moulding machine. Il diag Engineer 119:189-90 F 19 '15  
 Electrically operated jolt roll-over molding machine. Il Iron Age 96:675 S 23 '15  
 Foundations for jar-ramming molding machines. E. S. Carman. Il diag Foundry 43: 420-3 O '15; Same. Iron Tr R 57:1180-3 D 16 '15  
 Getting the most from molding machines. P. R. Ramp. diag Iron Age 96:1-4 Jl 1 '15  
 Home-made molding machines. W. H. Parry. Metal Ind n s 13:155 Ap '15  
 How sewing machine parts are molded and cast. H. C. Estep. Il Foundry 43:345-51 S '15  
 How to make automobile engine castings. Il Foundry 43:291-4 Ag '15  
 Jolt and squeezer molding machine. Il Iron Age 96:1100 N 4 '15  
 Jolt stripping plate machine. Il Iron Tr R 56: 225+ Ja 28 '15  
 Molding and casting large tunnel segments. L. J. Josten. Il diag Foundry 43:356-9 S '15  
 Molding machines and pattern mounting. J. F. Ervin. Iron Age 95:721-4 Ap 1 '15  
 Osborn molding machine. Il Foundry 43:79-80 F '15  
 Pneumatic rock-over molding machine. Il Iron Age 96:751 S 30 '15  
 Pneumatic vibrator for molding machines. Il Iron Age 96:750 S 30 '15  
 Squeezer type molding machine. Il Iron Age 95: 1166 My 27 '15

Molding sand. See Sand, Foundry

Molecular movements. See Brownian movements

**Molecular weights**

- Interpretation of molecular weight results from measurements on solutions. W. E. S. Turner. Am Chem Soc J 37:2068-4 S '15  
 Molecular weight of sodium carbonate and the atomic weight of carbon referred to silver and bromine. T. W. Richards and C. R. Hoover. Am Chem Soc J 37:95-107 Ja '15  
 Molecular weight of sodium sulfate and the atomic weight of sulfur. T. W. Richards and C. R. Hoover. Am Chem Soc J 37:108-13 Ja '15

**Molecules**

- Atoms, molecules and electrons. N. W. Rakestraw. Sci Am S 80:254-6 O 16 '15

**Molecules—Continued**

Some aspects of the atomic theory. F: Soddy.  
Sci Am S 80:178-9 S 18 '15  
Theory of valency and molecular structure.  
W: C. Arsen. diags Am Chem Soc J 36:  
1655-75 Ag '14  
See also Atoms; Molecular weights; Opti-  
cal rotation; Stereochemistry

**Moline, Kansas****Water supply**

Underflow water-supply at Moline, Kan. W. L.  
Benham. Eng N 73:925-6 My 13 '15

**Molybdenite**

Canadian molybdenite deposits. W. H. Smith.  
Eng & Min J 99:271-2 F 6 '15  
Manufacture of ferro-alloys in the electric  
furnace. R. M. Keeney. U S Bur Mines Bul  
77:146-51 '14

**Molybdenum**

Atomic weight of molybdenum. J: H. Müller.  
diags Am Chem Soc J 37:2046-54 S '15  
Molybdenum and copper. C. Vickers. Foundry  
43:344+ S '15  
Separation of tungsten from molybdenum.  
E: E. Marbaker. Am Chem Soc J 37:86-95 Ja  
'15

**Molybdic acid**

Molybdic acid recovery. C. G. Armstrong. J  
Ind & Eng Chem 7:784 S '15  
Recovery of molybdic acid. W. D. Brown. J  
Ind & Eng Chem 7:213-14 Mr '15; Same. Iron  
Tr R 56:1058 My 27 '15

**Moments of Inertia**

Moment of inertia of a rectangle by elemen-  
tary method. W: H. Gravell. Eng N 73:  
1073 Je 3 '15

**Monazite**

Brazilian monazite. Eng & Min J 100:759 N  
6 '15  
Monazite, thorium, and mesothorium. K. L.  
Kithil. biblog flow sheet U S Bur Mines  
Tech Pa 110:1-30 '15  
Thorium; an American industry—no danger  
of a shortage. T. Owens. Am Gas Light J  
103:187-8 S 20 '15

**Monel metal**

Casting monel metal. Mach 21:584 Mr '15  
Failure of the hull of the Sea Call. II Met &  
Chem Eng 13:884 D 1 '15  
Galvanic corrosion damages hull of yacht. Eng  
N 74:522-3 S 9 '15  
Monel metal boat. II Metal Ind n s 13:813 Ag  
'15  
Monel metal in water-works and other engi-  
neering service. Eng N 73:890 My 6 '15

**Money**

See also Credit

**Monochloroacetic acid**

Action of monochloroacetic acid on semi-  
carbazide and hydrazine. J. R. Bailey and  
W. T. Read. Am Chem Soc J 36:1747-86 Ag  
'14

**Monopolies**

Clayton act and the exclusive agent. E. J.  
Buckley. Metal Work 82:835 D 25 '14  
Private monopoly and present public opinion.  
G: O. Smith. Metal Work 83:924+ Je 25 '15  
See also Trusts, Industrial

**Monorailways. See Suspended railways****Monotype**

Modern methods of composing type. II Sci  
Am S 80:324 N 20 '15  
Monotype accounting problems. C. D. Bollin-  
ger. Inland Ptr 55:473-5 Jl '15  
Monotype in a trade plant. J. H. Walden. In-  
land Ptr 56:207-8 N '15  
Signs of the times in composing-machinery.  
C. D. Bollinger. Inland Ptr 56:184-6 N '15

**Monroe doctrine**

Monroe doctrine and Latin-American com-  
merce. L. G. Valentine. Am Ind 15:18-19+  
Ap '15

**Montana****Industries and resources**

Bull mountain coal field. J. P. Rowe and  
R. Wilson. maps Colliery 36:7-11, 74-9 Ag-S  
'15

Probable oil and gas in Montana. J. P. Rowe.  
Eng & Min J 99:647-9 Ap 10 '15  
See also Mines and mineral resources—  
Montana

**Montana power company**

System of the Montana power company.  
M. Hebgren. II map Elec W 65:1535-44 Je 12  
'15

**Montgomery Ward & co.**

Kansas City building of Montgomery Ward &  
co. II plan Arch & Bldg 47:35-40 Ja '15

**Montreal, Canada****Bridges**

Late Thomas C. Keefer and the plans for  
the Victoria bridge at Montreal. Eng N  
73:179-80 Ja 28 '15

**Galleries and museums**

Montreal art gallery. T: W. Ludlow. II plans  
Arch Rec 37:132-48 F '15

**Railroads**

Completing the Mount Royal tunnel into  
Montreal. II diags plan Ry Age 59:857-60 N  
5 '15

**Montrose, Colorado****Water supply**

Second rebuilding of the water-works of Mon-  
trose. P. W. Pinkerton. Eng N 73:883-4 My  
6 '15

**Monuments**

War monuments. Am Inst Arch J 3:151-2 Ap  
'15

See also Inscriptions

**Moorestown, New Jersey****Sewerage**

Converting old septic tank and contact beds  
into two-story tank and sprinkling filters  
at Moorestown. A. Potter. II plans Eng &  
Contr 42:473-6 N 13 '14

**Morgan building, New York**

Banking house of J. P. Morgan & co. II plans  
Arch & Bldg 47:5-14 Ja '15

**Morgan Park, Minnesota**

Model city near new steel plant. R. V. Saw-  
hill. II plan Iron Tr R 57:647-9 S 30 '15

**Morris, John Lewis**

Professor of practical mechanics, Sibley col-  
lege, 1868-1904. D. S. Kimball. por Sibley J  
29:315-19 Je '15

**Morris, William, 1834-1896**

Literature of typography. H: L: Bullen. por  
Inland Ptr 55:61-3 Ap '15

**Morristown, New Jersey****Railroads**

New passenger station of the D. L. & W. R. R.  
II plans Ry R 55:735-41 D 19 '14

**Sewerage**

Sewage-works of Morristown. C. Potts. II  
diags plan Eng N 73:1105-8 Je 10 '15

**Mortality**

Diseases dangerous at different periods of  
life. Sci Am S 79:149-50 Mr 6 '15  
Why do men over forty break down? C: F.  
Bolduan. Sci Am 118:63 Jl 17 '15

**Mortar**

Comparative tests of hardness, toughness and  
strength of mortar; diagrams. C. H. Moore-  
field and J. T. Voshell. Eng & Contr 44:270  
O 6 '15

Effect of fineness of sand and of clay and  
loam on the strength of mortar. F. L. Ro-  
man. Eng & Contr 43:403-6 My 5 '15

How consistency and age affect strength of  
mortar. Eng Rec 72:484 O 16 '15

Lime and Portland cement. Sci Am S 80:843  
N 27 '15

Manufacture of mortar. Sci Am S 80:332 N  
20 '15

Mixture of mortar for laying up block walls.  
Concrete Cem 6:39 Ja '15

Routine tests for determining strength of  
mortars. H. Ferrine. II Eng Rec 71:85 Ja 16  
'15



**Mortar—Continued**

- Sand for concrete and cement mortar should have jump in grading. R. H. McNeilly. Eng Rec 72:659-62 N 27 '15  
 Tests to determine the effect of normal and low temperatures on the strength of cement mortar. Eng & Contr 43:196-7 Mr 3 '15  
*See also Cement; Lime*

**Mortars (ordnance)**

- Austria's famous Skoda mortars. Il Sci Am 113:12 J1 3 '15  
 Rifles and mortars. Il diags Sci Am 111:472-3 D 5 '14

**Mosquitoes**

- Malaria and the transmission of diseases. R. Ross. Sci Am S 79:50-1 Ja 23 '15  
 Malarial mosquitoes as the food of bats. C. H. R. Campbell. Il Sci Am 113:425 N 13 '15

**Moths**

- Flour moths and army rations. W. P. Pycraft. Il Sci Am S 80:333 N 20 '15

**Motion**

- Apparatus for demonstrating Newton's laws. H. W. Harmon. diag Sci Am S 79:42-3 Ja 16 '15

*See also Mechanics*

**Motion pictures. See Moving pictures****Motion study**

- Eliminating waste motion in molding. R. E. Kennedy and J. C. Pendleton. Il Iron Age 94:662-4 S 17 '14; Same. Ind Eng 14:423-6 N 14  
 Industrial coach; how the efficiency engineer studies the human machine. Il Sci Am 113:402-3 N 6 '15  
 Motion study for the crippled soldier. F. B. Gilbreth. Il Am Soc M E J 37:669-73; Discussion. 37:673-5 D '15

**Motor barges**

- Development of inland water transportation. J. H. Bernhard. Eng Rec 72:332-4 S 11 '15  
 Modern self-propelled barge for the Mississippi river. Il plans Int Marine Eng 20:497-9 N '15  
 Motor boat Kern. Il plan Int Marine Eng 20:489 N '15  
 New Mississippi river barges with deck gantries. J. M. Sweeney. Eng N 74:668-9 S 30 '15  
 Performance of the shallow-draft producer-gas barge Richmond of the Augusta-Savannah barge line. Il Int Marine Eng 20:274 Je '15

**Motor boats**

- Application of electricity to propulsion: fifty-foot motor boat equipped with electric drive for experimental purposes. W. T. Donnelly. Il diags Int Marine Eng 20:204-8 Mr '15  
 Boat engines. Metropolitan S. A. E. topic. Horseless Age 35:446 Mr 31 '15  
 Diesel motor tug Chickamauga. G. E. Nicholson. Il Int Marine Eng 20:493-5 N '15  
 Motor fire boat Delta II. Il Int Marine Eng 20:492-3 N '15  
 Novel idea in boat construction. Il Sci Am 113:269 S 25 '15

*See also Motor barges*

**Motor buses**

- Auto-bus as an auxiliary to interurban railways. A. W. Leonard. Il Elec Ry J 46:570-1 S 18 '15  
 Auto-bus in London. H. H. Gordon. Elec Ry J 45:888 My 8 '15  
 Better bodies on Paris motor buses. Il Automobile 32:369 F 25 '15  
 Cost of bus operation. Il Elec Ry J 45:414-17 F 27 '15  
 Low two-story motor busses with novel seating system introduced in Vienna. diags Automobile 32:157-9 Ja 21 '15  
 Novel form of motor bus for interurban service between Minneapolis and St. Paul. Il Elec Ry J 46:29-30 J1 3 '15; Eng N 74:56 J1 8 '15; (Highway chair car). Sci Am 113:228 S 11 '15  
 One-man, pay-enter motor bus design. diags Automobile 32:641 Ap 8 '15  
 Operating costs for omnibuses in Sheffield, England. Elec Ry J 46:673 O 2 '15  
 Stepless bus with electric transmission. Il Automobile 32:159 Ja 21 '15

- Stepless omnibuses in New York. Il Sci Am 111:495 D 12 '14  
 Testing the equilibrium of double-deck buses at Vienna. Il Elec Ry J 44:1308 D 12 '14  
 Well construction of Vienna auto-bus. Il diags Elec Ry J 45:49 Ja 2 '15

*See also Electric buses; Jitney buses*

**Motor buses, Steam**

- Fixed calorific standard—a new use for gas coke. N. H. Humphrys. Am Gas Light J 102:73 F 1 '15  
 New coke fired road vehicle. Il diags Engineer 119:526-7 My 28 '15; Abstract. Eng M 49:740-1 Ag '15

**Motor cars. See Automobiles; Electric vehicles; Motor trucks****Motor cars (railroad)**

- Efficiency of motor cars for section forces. G. R. Morrison. Ry Age 59:527-8 S 17 '15; Same. Ry R 57:345-6 S 11 '15  
 Gasoline motor car on rails in the Pacific northwest. Il Elec Ry J 46:1030 N 27 '15  
 Inspecting steam railroads with a gasoline car. Il Sci Am 112:588 Je 12 '15  
 Motor cars for railways. Sci Am S 80:285 O 30 '15  
 Petrol rail coach engine. diags Engineer 119:426-7 Ap 30 '15  
 Railway inspection car follows automobile design. Il Automobile 32:313 My 6 '15  
 Record-breaking gasoline motor car. Il Elec Ry J 45:1215-16 Je 26 '15  
 Simplex rail coach. Il Engineer 119:336-8 Ap 16 '15  
 Thomas transmission rail coach. Il diags Engineer 120:42-3 J1 9 '15  
 300-hp. gasoline motor car for fast passenger service. Il Eng N 73:1094-5 Je 3 '15  
 Value of motor cars. W. R. McKeen. Ry Age 59:816-17 O 29 '15

**Storage battery**

- Large storage battery car for Cambria & Indiana railway. Il Elec Ry J 44:1356 D 19 '14  
*Trailers*  
 Long Island railroad adopts light, steel trailers. Il diags Elec Ry J 46:136-8 J1 24 '15

**Motor cars (street railroad)****Storage battery**

- Street railway service being inaugurated in Miami, Fla., with storage-battery cars. Il diag Elec Ry J 46:920-1 O 30 '15  
**Motor chairs. See Wheel chairs, Electric**  
**Motor cycles**

- Location of motorcycle power plant troubles: chart. V: W. Page. Sci Am 112:314-15 Ap 3 '15  
 Machining motor cycle parts. D. T. Hamilton. Il Mach 21:377-80 Ja '15  
 Rise of the motorcycle. Sci Am 112:581+ Je 5 '15  
 Sheet metal side car attachment. Il Metal Work 84:405 S 24 '15  
**Motor cycles in war**  
 Motorcycling under fire. Sci Am 112:42 Ja 2 '15  
 War uses of the motorcycle: cycle ambulance and motor machine gun. Il Sci Am 112:138+ F 6 '15

**Motor-generators**

- Direct-current three-wire systems. G. Fox. diags Power 41:505-8 Ap 13 '15  
 Hertner vertical charging set. Il Elec R & W Elec'n 66:699 Ap 10 '15  
 Large motor-generator in San Francisco. Il Elec R & W Elec'n 66:1165-6 Je 19 '15; Elec W 65:1587 Je 12 '15  
 Motor-generators versus rotary converters. E. Friedlander. Power 42:453 S 28 '15  
 New motor-generator set for charging automobile batteries. Il Elec R & W Elec'n 67:383 Ag 28 '15; Elec W 66:485 Ag 28 '15

**Motor omnibuses. See Motor buses****Motor plows**

- Coming of the motor plough. Il diag Engineer 120:361-4, 408-10 O 15, 29 '15  
 Ford tractor plows 5 to 10 acres per day at a cost of \$3.10. Automobile 32:584 S 23 '15  
 Motor plough. Il diags Engineer 119:386 Ap 16 '15; Same. Automobile 32:312 My 6 '15

**Motor ships**

- Diesel engine applied to marine purposes. C. Kloos. *Diags Power* 42:734-8 N 23 '15  
 Installation of 120 horsepower Bolinder oil engine in pilot schooner Gracie S. *Diags Int Marine Eng* 20:158-60 Ap '15  
 Large Diesel engine ships for marine navigation and their economic possibilities; abstract. W. Scholz. *Am Soc M E J* 37:238-30 Ap '15  
 Motor ship Gallia. *Diags Int Marine Eng* 20:420-1 S '15  
 Motor ship Tongking. *Diags Int Marine Eng* 20:64-5 F '15  
 Motorship Pacific. *Int Marine Eng* 20:516 N '15  
 Performance of Diesel-engined motor ships. *Int Marine Eng* 20:331 S '15  
 Performance of motor ships. *Engineer* 119:65-6, 322 Ja 15, Ap 2 '15  
 Revival of the reversible blade propeller. *Diags Engineer* 119:295-7, 306 Mr 26 '15  
 Trials of the submarine tender Fulton; first United States naval vessel to be fitted with Diesel engines. *Diags Int Marine Eng* 20:76-8 F '15  
 Werkspoor motor ships in service. T. O. Lisle. *Int Marine Eng* 20:223-6 Ja '15  
*See also* Diesel engines, Marine; Gas and oil engines, Marine; Motor boats

**Motor spirit**

- Low-temperature coal distillation. F. M. Perkins. *J Ind & Eng Chem* 7:352 Ap '15  
 Two improvements devised for motor spirit process. *Diags Automobile* 32:533 Mr 25 '15

**Motor truck industry**

- Beginning of a new epoch in the motor truck industry. *Sci Am* 113:396 My 1 '15  
 Demonstrations—necessity and charges. J. C. Avers. *Horseless Age* 35:240-3 F 17 '15  
 Directory of truck makers; 253 vehicles, their makers and capacities. *Automobile* 32:62-4 Ja 14 '15  
 Field for 750,000 trucks. *Automobile* 31:1169 D 24 '14  
 Influence of war on industrial transportation. *Sci Am* 113:452-4 N 20 '15  
 Metropolitan section of S. A. E. discusses truck makers' obligations to customers. B. B. Bachman. *Automobile* 32:772-3 Ap 29 '15  
 Motor truck problem. *Sci Am* 112:611 Je 19 '15  
 Résumé of papers read before convention of motor truck manufacturers and dealers at Detroit. *Horseless Age* 35:606-8 My 5 '15  
 Truck makers hold successful convention. *Horseless Age* 35:626-8 My 12 '15  
 Truck makers to decide on standard service policy. L. V. Spencer. *Automobile* 32:841-4 My 13 '15  
 Trucks and the traffic engineer. *Automobile* 31:1030-1 D 3 '14

**Motor truck trailers**

- Increasing truck efficiency with trailers. A. R. Miller. *Horseless Age* 35:802-3 Je 16 '15

**Motor trucks**

- Bingham 1250 delivery car. *Diags Horseless Age* 34:326 Ag 26 '14  
 Chase water-cooled and worm-driven truck. *Diags Automobile* 33:118-19 Ji 15 '15  
 Chase worm-drive trucks. *Diags Horseless Age* 35:440 Mr 31 '15  
 Commerce delivery. *Diags Automobile* 33:232-3 Ag 12 '15  
 Convenient meter installation runabout and cost of its operation. H. A. Hippler. *Diags Elec W* 88:415-16 Ag 21 '15  
 Detroit package wagon enters field. *Diags Automobile* 33:506-7 S 16 '15  
 Detroit package wagon in three body types. *Diags Horseless Age* 35:330-1 O 1 '15  
 Electric system on Reo  $\frac{3}{4}$ -ton truck. *Diags Automobile* 33:378-9 Ag 26 '15  
 Four chassis for transit trucks. *Diags Automobile* 31:1111 D 17 '14  
 Four-ton petrol motor lorry. *Diags Engineer* 118:507 N 27 '14  
 Front drive, bottom dump motor truck. *Diags Good Roads* n s 9:241 Je 5 '15  
 Hall motor truck. *Diags Horseless Age* 35:504-5 Ap 14 '15  
 Hall truck enters field. *Diags Automobile* 32:768-9 Ap 29 '15  
 Indiana three-quarter-ton truck. *Diags Horseless Age* 35:605 My 5 '15

- International harvester truck; new model. *Diags Horseless Age* 35:271 F 24 '15  
 International 1000 lb. truck. *Diags Horseless Age* 35:333-3 O 1 '15  
 International 1-ton truck. *Diags Horseless Age* 35:541 Ap 21 '15  
 Jeffrey Quad truck at Victor, Colo. *Eng & Min J* 100:682 O 23 '15  
 Kearns one thousand pound truck. *Diags Horseless Age* 35:374 O 15 '15  
 Kissel adds 2 $\frac{1}{2}$ - to 1-ton truck. *Diags Automobile* 33:932 N 25 '15  
 Maintaining concrete and brick roads in Illinois. B. H. Piepmeyer. *Diags Eng N* 74:310-13 Ag 12 '15  
 Motor truck and the road; who should pay the road tax? J. S. Harwhite. *Diags Sci Am* 113:66-7 Ji 17 '15  
 Motor truck notes and queries. *Sci Am* 113:345 O 16 '15  
 1915 truck chassis more flexible. *Automobile* 32:60-1 Ja 14 '15  
 Packard worm-drive trucks. *Diags Automobile* 32:108-9 Ja 21 '15  
 Packard worm-driven trucks; technical details. *Diags Horseless Age* 35:101-2 Ja 20 '15  
 Performance of gas and electric trucks. W. J. Miller and S. G. Thompson. *Automobile* 33:761-3 O 21 '15  
 Remodelling cars for commercial uses. *Diags Horseless Age* 34:309-10 D 2 '14  
 Republic trucks—simplicity. *Diags Automobile* 33:656-7 O 7 '15  
 Republic two-ton internal gear drive truck. *Diags Horseless Age* 35:46 Ji 14 '15  
 Stearns-Knight five-ton truck. *Diags Horseless Age* 35:25 Ji 7 '15  
 Three-ton petrol lorry. *Diags Engineer* 119:68-9 Ja 15 '15  
 United motor truck models. *Diags Automobile* 32:534-5 Mr 25 '15  
 Weak spots brought out in German trucks. *Automobile* 33:815 S 30 '15  
 White power-hoisting coal body. *Diags Automobile* 32:423 Mr 4 '15  
 Why local regulations of motor truck traffic are objectionable. *Horseless Age* 35:407-9 Mr 24 '15  
 Worm drive on new Locomobile 3 and 4-tonners. *Diags Automobile* 31:1264 D 31 '14  
*See also* Automobiles; Electric trucks; Loading and unloading; Motor truck industry; Tires (automobile)

**Axles**

- 5-ton Sheldon axle with ball bearing worm. *Diags Automobile* 33:572 S 23 '15

**Bodies**

- Bodies feature of truck exhibits. *Diags Automobile* 32:444-5+ Mr 11 '15

**Cost of operation**

- Chicago autotruck service reduces hauling charges. *Eng Rec* 72:299-300 S 4 '15  
 Comparisons between horse, gasoline and electric delivery costs; summary of electric vehicle study by Massachusetts Institute. H. F. Thomson. *Elec R & W Elec'n* 67:874-8 N 6 '15  
 Cost data for auto trucks. E. N. Bryan. *Eng Rec* 71:211-12 F 13 '15  
 Cost of handling material with motor versus horse-drawn equipment. H. F. W. Arnold. *Eng M* 50:23-32 O '15  
 Cost of motor-trucking by Chicago water works in 1914. *Eng & Contr* 44:163 S 1 '15  
 Economy of heavy motor trucking for Lynn, Mass., water works. D. A. Sutherland. *Eng & Contr* 44:415 N 24 '15  
 Extent and cost of use of motor trucks in municipal refuse collection service. S. A. Greeley. *Eng & Contr* 44:236-7 O 13 '15  
 Garbage collection studies in Chicago justify continued use of horses. *Eng Rec* 72:52-3 Ji 10 '15

- Motor truck operation and accounting. C. A. Dickens. *Diags Munic Eng* 49:46-9, 130-6, sup 25+ Ag, O-N '15

- Motor trucks and business efficiency. *Diags Metal Work* 33:50-2 Ja 1 '15

- Motor vehicles in water-works service at Los Angeles. B. A. Heinly. *Eng N* 73:361-3 My 6 '15

**Motor trucks—Cost of operation—Continued**

Operating costs of two Cincinnati factories, in comparison with horse-drawn vehicles. *Iron Age* 98:223 J1 22 '15; Same cond. *Ind Eng* 15:104 S '15

Shop equipment and motor trucking costs, meter division of Milwaukee water works. *Eng & Contr* 43:334-5 Ap 14 '15

Underestimating the cost of motor trucking. E. N. Bryan. *Eng & Contr* 43:210 Mr 10 '15

Utilization of the motor truck in highway work. *Il Good Roads* n s 9:171-9 My 1 '15

*See also* Electric trucks—Cost of operation

**Fenders**

Dummies play important part in fender tests. H. A. Allen, C. E. Fitch and H. Borland. *Il Eng Rec* 72:571 N 6 '15

**Gearing**

Another viewpoint; defense of internal gear drive. V. V. Torbensen. *Horseless Age* 35:551 My 12 '15

Calculation of hollow propeller shafts. *diag Horseless Age* 35:369 O 15 '15

Hotchkiss drive for trucks. A. M. Laycock. *diags Automobile* 33:333-4 N 4 '15

Internal gear drive. C. C. Hancock. *Horseless Age* 35:386 Je 30 '15

Internal gear drive. C. H. Taylor. *Horseless Age* 35:566-7 Ap 23 '15

Internal gear drive vs. worm drive. A. F. Maiss. *Horseless Age* 35:352; 35:34 Je 23, J1 21 '15

Worm drive for motor trucks. *Horseless Age* 35:441 Mr 31 '15

Worm drive vs. internal gear drive. C. C. Hancock. *Horseless Age* 35:650-1 My 12 '15

**Loading**

*See* Loading and unloading

**Management**

Increasing motor-truck efficiency. *Eng N* 73: 1179-80 Je 17 '15

**Manufacture**

Drill fixtures for motor truck parts. C. T. Schaefer. *diags Horseless Age* 34:318-19 D 2 '14

Machining motor truck sprockets and drums. A. A. Dowd. *diags Horseless Age* 35:436-9 Mr 31 '15

Study of an axle shaft for a motor truck. J. Younger. *Il diags Am Soc M E J* 37:435-9 Ag '15; Same. *Iron Tr R* 56:1311-14 Je 24 '15; Same cond. *Horseless Age* 35:142-4 Ag 1 '15; Abstract. *Iron Age* 98:27 J1 1 '15; Discussion. *Am Soc M E J* 37:439-40 Ag '15

**Price lists**

Business man's reference table of commercial vehicles. *Sci Am* 112:28+ Ja 2 '15

Price classification of 1915 trucks. *Automobile* 32:85-7 Ja 14 '15

**Safety devices**

*See also* Motor trucks—Fenders

**Service stations**

*See* Automobile service stations

**Specifications**

Gasoline motor trucks for 1915: specifications of 377 American commercial vehicle chassis. *Automobile* 32:68-79 Ja 14 '15

**Springs**

Care of truck springs. J. G. Utz. *Automobile* 31:1132-3 D 17 '14

**Tires**

*See* Tires (automobile)

**Wheels**

English pressed steel truck wheel. *diags Automobile* 32:421 Mr 4 '15

Machining steel motor truck wheels. A. A. Dowd. *diags Horseless Age* 34:553-5 D 16 '14

Need for reducing the number of standard wheel and tire sizes for trucks. E. W. Kerr. *Elec R & W Elec'n* 67:712 O 16 '15

Wheels for commercial vehicles. T. Clarkson. *Il diags Automobile* 32:189-91 Ja 28 '15; Abstract. *Horseless Age* 35:175-6 F 3 '15

*See also* Motor vehicles—Wheels

**Motor trucks, Military**

Dennis subsidy lorry. *Il plan (supp) Engineer* 119:576-8, 593-4 Je 11-18 '15

Example of four-wheel drive truck used for war purposes—rules governing the requirements. *Il diag Automobile* 31:1190-1 D 17 '14

Makes of automobile trucks used by the United States army. *Automobile* 33:245 Ag 5 '15

Motor searchlights with the British-French forces. *Il Elec R & W Elec'n* 67:239 Ag 7 '15

Motor truck in modern military service. *Il Sci Am* S 79:280-2 My 1 '15

Motor trucks and modern warfare. J. Brinker. *Il Sci Am* 113:398-9+ N 6 '15

New American military truck; Jeffery machine drives, steers and brakes on four wheels. J. W. DeCou. *Il Eng M* 49:746-9 Ag '15

Saving trucks at the front in France. W. F. Bradley. *Il Automobile* 32:51-5+ Ja 14 '15

Sham warfare motor equipment test. J. E. Schipper. *Il Automobile* 33:422-5 S 2 '15

Type of truck for military use. J. W. DeCou. *Horseless Age* 35:300 Je 16 '15

U. S. army needs motor transports. J. E. Schipper. *Il Automobile* 33:231-3 Ag 5 '15

War trucks arrive in France. W. F. Bradley. *Il Automobile* 33:236-31 F 4 '15

**Motor trucks, Municipal**

Baltimore municipal White truck has wireless equipment. *Il Automobile* 31:1023 D 3 '14

*See also* Electric trucks, Municipal; Street cleaning apparatus, Motor

**Motor trucks in construction work**

Cost of motor-truck hauling depends on conditions. W. Collins, Jr. *Eng N* 74:653 S 30 '15

Demonstration of gravel road construction using motor truck and road grader. R. L. Morrison. *Il Eng & Contr* 44:205 S 15 '15

Excavating aggregates with drag line and hauling by motor truck on Indiana concrete road work. S. B. Bates. *Il plans Eng & Contr* 44:231-3 S 22 '15

Handling 400 tons of stone per day with auto trucks. *Eng Rec* 70:621-2 D 5 '14

Hauling gravel with motor truck and trailers; a service test in concrete road construction. *Il Eng & Contr* 42:535-6 D 9 '14

Hauling heavy water pipes. E. C. Miles. *Il Munic J* 38:97-9 Ja 25 '15

Hauling material on the North side reservoir, Pittsburgh. *Eng N* 73:173-4 Ja 28 '15

More use of motor trucks for hauling structural steel. D. P. N. Little. *Il diag Eng N* 74:554-5 S 16 '15

Motor truck and the contractor. B. A. Gramm. *Munic Eng* 49:180-1 N '15

Motor truck in road building. *Il Munic Eng* 46:205-8 Mr '15

Motor truck operation and accounting. *Il Munic Eng* 49:44-9 Ag '15

Motor trucks for heavy structural steel. W. Collins, Jr. *Il Eng N* 74:174-6 J1 22 '15

Pipe hauling by motor truck. W. L. Vonnard. *Il Munic J* 38:259 F 25 '15

Utilization of the motor truck in highway work. *Il Good Roads* n s 9:171-9 My 1 '15

**Motor trucks in freight handling**

Methods of handling L. C. 1.1. outbound freight. E. H. Lee. *Ry Age* 57:1152-4 D 25 '14; Conclusions. *Eng Rec* 71:52 Ja 9 '15

Trucking L. C. 1.1. freight. *Ry R* 56:352-3 Mr 13 '15

**Motor trucks in ore haulage**

Motor-truck ore hauling in California. *Eng & Min J* 100:790 N 13 '15

Motor trucking iron ore; abstract. J. Younger. *Il Eng & Min J* 99:242 Ja 30 '15

**Motor vehicles**

Motorized police department. K. C. Cardwell. *Il Munic J* 38:316-17 Mr 11 '15

Practicability of applying same spring elements to motor vehicles of all classes. *diags Automobile* 32:354-6+ My 13 '15

*See also* Ambulances; Automobiles; Cyclecars; Electric vehicles; Fire apparatus, Motor; Jimney buses; Motor buses; Motor cycles; Motor trucks; Tractors; Unicycles

**Wheels**

Heavy motor vehicles—wheels and weights. W. W. Beaumont. *Engineer* 119:523 My 28 '15

**Motorcycles.** See Motor cycles

## Motors

See also Aeroplane motors; Dynamos; Electric motors; Engines; Gas and oil engines; Machinery; Steam engines; Turbines; Water wheels; Windmills

## Mountain railroads

Furka railway, a new Alpine railway from the Rhone to the Rhine, A. Gradenwitz. *Il Sci Am S 79:344-5* My 29 '15  
Great railway electrification project. *Il map Sci Am S 79:56-8* Ja 23 '15  
Hamilton electric incline railway. *Il Elec Ry J 46:115-16* JI 17 '15; Same. *Eng N 74:49-51* JI 8 '15; Same. *Ry R 57:213-14* Ag 14 '15  
Hamilton incline railway. *Il Munic J 39:41-2* JI 8 '15  
Looping the loop in the Alps. J. F. Springer. *Il Sci Am 111:504-5* D 19 '14  
Mountain railway electrification. F. Castiglioni. *Elec Ry J 46:358-60* O 23 '15

See also Cable railroads

## Mountain roads

Alpine roadbuilding in the Hudson river valley. *Il Eng N 74:1025-6* N 25 '15  
Build scenic highway up Pike's Peak. *Il Eng Rec 73:504-6* O 23 '15  
Connecting roads to mountain parks of Denver, Colorado. O. E. Thum. *Il Munic Eng 49:15-17* JI '15  
Location and construction of highways in mountain country. F. W. Harris. *Il diags Eng N 72:1199-1201* D 17 '14; Excerpt (Don'ts in mountain road location). *Eng & Min J 99:237-8* Ja 30 '15; Excerpt (Bagley scraper for road making). *Eng & Min J 99:325* F 13 '15  
Making a road up the Palisades. *Il plan Eng N 74:998-1000* N 18 '15  
Methods and cost of constructing a mountain road system in Wise county, Virginia. W. F. Cocke. *Il map Eng & Contr 43:341-4* Ap 14 '15  
New California road overcomes mountain barrier. N. D. Darlington. *Il Eng Rec 72:322-3* S 11 '15  
Road construction in Denver's mountain parks. O. B. Thum. *Il plan Munic J 38:417-20* Ap 1 '15  
Storm King highway, New York. H. E. Breed. *Il map Eng N 74:721-4* O 14 '15

## Mountaineering

Switzerland in America. A. C. Laut. *Il Am For 20:339-57* D '14

## Mountains

Switzerland in America. A. C. Laut. *Il Am For 20:339-57* D '14

See also Mitchell, Mt.

## Moving. See Building moving

## Moving picture laboratories

Air conditioning in a moving picture laboratory. *Il plans Heat & Ven 12:20-6* F '15

## Moving picture theaters

British India; cinematograph theaters. *U S Sp Cons Rep 72:167-8* '15

Modern moving picture theatre: Globe theatre, Los Angeles. *Il plans Bldg Age 37:19-26* Ja '15

Moving picture theater of to-day. *Il plans Bldg Age 37:19-26* N '15

Planning the moving picture theatre. J. J. Klaber. *Il plans Arch Rec 38:540-54* N '15

Plumbing installation in movie theater. *Il plan Metal Work 84:99-100* JI 23 '15

## Ventilation

Chicago ventilation commission first report. *Il Metal Work 83:632-5+* Ap 30 '15

Proposed standards for ventilation legislation for motion picture show places; with discussion. *Am Soc Heat & V E 19:166-78* '13

Ventilating southern motion picture theater. *Il plan Metal Work 83:869-70+* Je 18 '15

## Moving pictures

Arc-light controller for motion picture projection apparatus. *Il Sci Am 112:272* Mr 20 '15

Artificial lighting of moving picture studios. W. A. D. Evans. *Il Illum Engr 8:284-8* Je '15

Compensarc for motion-picture projectors. C. Walford. *diag Elec R & V Elec'n 67:230-1* Ag 7 '15

Electric lighting for motion-picture studios. L. G. H. Smith. *Elec W 65:1040-2* Ap 24 '15

Electric sunshine in movie production in California. *Il Elec W 66:136* JI 17 '15

How motion pictures are made. *Mach 21:445* F '15

Intermittent mechanism for motion picture projectors. W. B. Morton. *Il diags Sci Am 112:614* Je 19 '15

Invention and development of photography; from the daguerreotype to the moving picture. *Sci Am 112:564+* Je 5 '15

Kinematographics. *Sci Am S 80:251* O 16 '15

Methods by which the European war has been filmed. E. A. Dench. *Sci Am 112:377+* Mr 20 '15

Motion picture magic; playing tricks on time. C. H. Claudy. *Il Sci Am 112:454-5* My 15 '15

Motion picture magic; what we see and what we think we see. C. H. Claudy. *Il Sci Am S 80:184-5* S 18 '15

Motor-driven motion-picture projector. *Il Elec R & V Elec'n 67:952* N 20 '15

Non-winding motion-picture reel. *Il Elec R & V Elec'n 66:223* Ja 30 '15

Notes on the use of light in cinematograph work. *Illum Engr 8:310-14* JI '15

Producing mechanical moving pictures. *Mach 21:455-6* F '15

Romance of motion pictures. C. F. Jenkins. *Sci Am S 79:323* My 22 '15

Stop motion for moving picture machines. W. B. Morton. *diags Sci Am S 79:396-7* Je 19 '15

Strangest city in the world; a town given over to the moving pictures. *Il Sci Am 112:365* Ap 17 '15

Throw-over arrangement for operating two motion-picture machines. *diag Elec R & V Elec'n 67:341* Ag 21 '15

See also Moving picture laboratories; Moving picture theaters

## Moving pictures, Colored

Difficulties of color cinematography. *J Fr Inst 180:633* N '15

Motion pictures in colors. E. Coustet. *diags Sci Am S 78:386-7* D 19 '14

## Moving pictures, Municipal

Advertising a city by moving pictures. A. Marple. *Munic Eng 48:298* My '15

## Moving pictures in education

Films may help in the selection of an occupation. *Sci Am S 80:383* N 20 '15

Government uses motion pictures. C. J. Blanchard. *Il Sci Am S 80:120-2* Ag 21 '15

Motion films of molecular movements. *Il Elec W 66:708* S 25 '15

Moving picture exchange for A. E. R. A. F. J. Warnock. *Elec Ry J 46:820-1* O 16 '15

Safety first for you and me. H. L. Brownell. *Elec Ry J 46:749* Ap 17 '15

Uncle Sam in the movies. C. J. Blanchard. *Il Am For 21:532-40* Ap '15

## Moving pictures in industry

Circulating motion-picture films to stimulate electrical business. *Elec W 65:173* Ja 16 '15

Motion picture in industry utilized by manufacturers of machinery in selling their products. A. L. Morris. *Il Iron Tr R 56:517-18* Mr 11 '15

## Moving pictures in science

Motion pictures of electrolysis. *Il Sci Am S 80:340-1* N 27 '15

Röntgen motion pictures; the Dessauer process. *Il Sci Am 112:312* Ap 3 '15

## Moving pictures in war

Military air scouting by motion pictures. E. A. Dench. *Sci Am 112:156* F 13 '15

## Moving stairways

Extension of the Bakerloo tube. *Il plan Engineer 113:92* Ja 22 '15

## Mufflers, Automobile. See Automobile mufflers

## Muir, John, 1838-1914

Appreciation. G. B. Sudworth. *por Am For 21:184-5* Mr '15

John Muir in college. C. E. Vroman. *Sci Am S 80:103* Ag 14 '15

- Mules**  
 Mine mule investigations. G. E. Wentworth. Colliery 35:261-2 D '14
- Multiplication**  
 Multiplying large numbers on adding machines. R. C. Hardman. Eng N 74:703 O 7 '15
- Mundy, Joseph S., 1847-1915**  
 Sketch. por Eng N 73:1141 Je 10 '15
- Municipal accounting**  
 Classifications of municipal expenditures in budgets and accounts and the purposes which they subserve. L. G. Powers. J Account 19:118-36 F '15  
 Development of a unit cost system. N. Cunliff. II Assn Eng Soc J 53:74-85 Ag '14; Same. Eng & Contr 42:374-6 O 21 '14; Discussion. Assn Eng Soc J 53:85-101, 165-70 Ag-S '14  
 Inaccurate municipal accounting and cost keeping. Eng & Contr 43:438 My 19 '15  
 Municipal accounting and its relationship to government. H. W. Carroll. J Account 20:280-70 O '15  
*See also Municipal finance*
- Bibliography**  
 List of references on municipal accounting. H. H. B. Meyer. Special Libraries 6:63-77 Ap '15
- Municipal advertising**  
 Advertising a city by moving pictures. A. Marple. Munic Eng 48:268 My '15
- Municipal art.** *See* City planning; Municipal buildings
- Municipal buildings**  
 Annex to the city hall, Boston, Mass. II plans Arch & Bldg 47:265-7 J1 '15  
 Bridges and buildings in cities, 1915; tabulation. Munic Eng 48:267-8 Ap '15  
 City hall, Burlingame, California; views and plans. Brickb 23:pl 182-3 D '14  
 City of Jacksonville engineering building. W. P. Darwin. II plans Eng N 72:1220 D 17 '14  
 Municipal public halls; court decisions in several states. J. Simpson. Munic J 39:617-19 O 21 '15  
 Project for large municipal convention hall in Chicago. II map Ry R 56:100-1 Ja 18 '15  
 San Diego's municipal stadium. F. A. Rhodes. II plan Eng N 74:577-80 S 23 '15  
*See also Public comfort stations*
- Municipal centers.** *See* City planning
- Municipal charters**  
 Proposed new charter for Newark, N. J. Munic Eng 49:140 O '15
- Municipal colleges**  
 Training for the municipal service. C. L. King. Sci Am S 79:118-19 F 20 '15; Same cond. with discussion. Am Soc M E J 37:98-101 F '15
- Municipal corporations**  
 Municipal powers re. lighting plants. J. Simpson. Munic J 38:880-3 Je 24 '15  
 Municipal trading; legal powers of cities to engage in plumbing, brick manufacture, quarrying and dealing in fuel, real estate and liquor. J. Simpson. Munic J 38:732-4 My 27 '15; Same abr. Munic Eng 49:24-5 J1 '15
- Municipal electric shops.** *See* Electric shops, Municipal
- Municipal electricians, International association of.** *See* International association of municipal electricians
- Municipal employees**  
 Training for the municipal service. C. L. King. Sci Am S 79:118-19 F 20 '15; Same cond. with discussion. Am Soc M E J 37:98-101 F '15
- Municipal engineering**  
 Application of geology to the problems of the municipal engineer. H. Lapworth. Eng & Contr 42:179-81 Ag 19 '14  
 Broader applications of chemistry by the municipality. H. W. Mahr. J Ind & Eng Chem 6:1080-2 D '14  
 City engineer's records in Frankfort, Ind. R. H. Boynton. Munic Eng 49:78-9 Ag '15; Same. Eng & Contr 44:165-6 S 1 '15
- Employment of experts by cities.** M. L. Cooke. Eng & Contr 42:398 O 28 '14
- Factors in municipal engineering.** M. L. Cooke. Sci Am S 80:238-40 O 9 '15; Abstracts. Am Soc M E J 37:81-7 F '15; Eng Rec 70:644-5 D 12 '14; Eng & Contr 42:575-6 D 23 '14; Discussion. Am Soc M E J 37:85-7 F '15
- Municipal engineering works of San Francisco.** A. J. Cleary. II plans maps diag Eng N 73:329-325 F 18 '15
- Principles governing the organization of city engineering departments.** E. Willis. Eng & Contr 42:253-5 S 9 '14
- Rules for subordinate engineers on municipal work.** M. M. O'Shaughnessy. Eng N 73:446 Mr 4 '15
- Sidewalk work in Cincinnati; securing the construction of sidewalks, assessing for and keeping records of same.** D. L. Barr. Munic J 38:763-6 Je 3 '15
- Standardizing engineering positions and salaries in New York city.** Eng N 73:54-5 Ja 14 '15  
*See also Municipal improvement; Parks; Pavements; Public works; Refuse and refuse disposal; Refuse collection; Sanitary engineering; Sewage disposal; Sewerage; Street cleaning; Streets; Water purification; Water supply engineering*
- Municipal exhibits**  
 Municipal exhibit at Dayton, Ohio. II Munic J 39:690-2 N 4 '15
- Municipal farms**  
 Water-works farming and forestry by Los Angeles. B. A. Heinly. Eng N 73:745 Ap 15 '15
- Municipal finance**  
 Annual budget. W. T. Childs. Munic J 39:545-7 O 7 '15  
 Financing public improvements on the pay-as-you-go plan. C. E. Buerger. Eng N 72:1179-80 D 10 '14  
 How apportion costs of municipal improvements? N. P. Lewis. Eng Rec 72:600-7 N 27 '15  
 Making water bills a lien on real property. Eng & Contr 42:425-6 N 4 '14  
 Municipal expenditures. Munic J 38:11 Ja 7 '15  
 Paying contractors in bonds. A. F. Bell. Munic J 39:809-10 N 25 '15  
 Payment for special street lighting. Elec R & W Elec'n 65:1129-30 D 12 '14  
 Rational budget making. Munic J 39:695-7 N 4 '15  
*See also Municipal accounting; Municipal government*
- Municipal forests.** *See* Forests, Municipal
- Municipal franchisees**  
 Features of nineteen typical heating franchises. II Heat & Ven 12:43-5 J1 '15  
 Modern franchise for a public service corporation. C. C. Brown. Munic Eng 48:89-98 F '15
- Municipal co-operation in public utility management.** P. J. Kealy. Am Inst E E Pro 34:2263-74 O '15; Same cond. Elec Ry J 46:861-3 O 23 '15
- Public service corporation and the municipality; with discussion.** J. Logan. Boston Soc C E J 2:223-69 Je '15  
*See also Electric service companies—Franchisees; Street railroads—Franchisees*
- Municipal garages.** *See* Garages, Municipal
- Municipal gas plants.** *See* Gas manufacture and works, Municipal
- Municipal government**  
 Aspects of city-planning administration in Europe. F. B. Williams. Am Inst Arch J 3:260-4 Je '15  
 Municipal life and government in Germany. by W. H. Dawson. Review. Munic Eng 48:142-3 F '15  
 Organization, character of personnel, scope of work, and methods of operation and control of a large municipal highway department. W. H. Connell. II map J Fr Inst 179:489-69 Ap '15

**Municipal government—Continued**

Principles governing the organization of city engineering departments. E. Willis. Eng & Contr 42:253-5 S 9 '14

See also Fire departments; Municipal corporations; Municipal finance; Municipal law; Municipal officers; Municipal ownership; Municipal supplies; Police

**City manager plan**

City managers in the West. W. F. Kerr. Munic Eng 48:199-201 Mr '15

Commission and city manager forms of government. H. H. Rumble, R. W. Peatross and J. E. Burke. Munic Eng 49:52-6 Ag '15

Commission government and an engineer manager for Lakeland, Florida. H. D. Mendenhall. Munic Eng 48:249-51 Ap '15

Commission-manager form of government. D. A. Reed. Eng & Contr 43:82 F 3 '15

Commission-manager form of government and its relation to the engineering profession. H. M. Waite. Boston Soc C E J 2:1-14 Ja '15; Abstract. Eng M 48:894-6 Mr '15; Discussion. Boston Soc C E J 2:14-21 Ja '15

Commission-manager government. Munic J 38:318 Mr 11 '15

Dayton's progress under commission-manager. W. S. Crandall. Munic Eng 49:67 Ag '15

Discussion of the commission-manager form of government. J. B. Blood. Boston Soc C E J 2:131-3 Mr '15

Early difficulties encountered under the commission-manager form of municipal government. Eng & Contr 42:551 D 16 '14

Experience at Inglewood, Calif., with the city manager form of government. P. E. Kressley. Eng & Contr 42:465-6 N 11 '14

First convention of city managers. Eng N 72:1189-90 D 10 '14

Hour with a city manager. Eng Rec 71:169 F 6 '15

Powers and duties of the city manager defined. H. M. Waite. Eng Rec 72:664 N 27 '15

Publicity necessary for city manager success. W. Miller. Eng Rec 72:666 N 27 '15

Results obtained at Abilene, Kan., in 16 months under commission-manager government. K. Riddle. Eng & Contr 48:503-4 N 25 '14

Training of the city manager. H. M. Waite. Munic Eng 48:44 Ja '15

Year of commission-manager government at Lakeland, Fla. D. F. McLeod. Eng N 72:1118 D 3 '14

Year of the commission-manager plan at Titusville, Penn. L. O. Bradley. Eng N 72:1155 D 10 '14

**Commission plan**

Commission and city-manager cities. Munic J 38:686 My 20 '15

Commission and city manager forms of government. H. H. Rumble, R. W. Peatross and J. E. Burke. Munic Eng 49:52-6 Ag '15

Municipal halls. See Municipal buildings

**Municipal improvement**

Architect's part in the world's work. F. L. Ackerman. Arch Rec 37:149-53 F '15

British India; improvement trusts. U S Sp Cons Rep 72:61-6 '15

How apportion costs of municipal improvements? N. P. Lewis. Eng Rec 72:666-7 N 27 '15

Municipal improvements for 1915; tabulation. Munic Eng 48:252-71 Ap '15

Pertinent paragraphs from a real report. M. L. Cooke. U Eng M 50:445-9 D '15

See also Baths, Public; Building laws; City planning; Cleaning of cities; Dust prevention; Electric wire and wiring; Fire protection; Garden cities; Harbors; Housing problem; Landscape gardening; Lighting; Parks; Pavements; Public comfort stations; Refuse and refuse disposal; Refuse collection; Smoke prevention; Streets; Trees

Municipal improvements, American society of. See American society of municipal improvements

**Municipal laboratories**

Portland's municipal testing laboratory. H. White. U Eng M 50:445-9 D '15

**Municipal law**

Contracts by municipal officers. J. Simpson.

Munic J 39:807-8 N 25 '15

Municipal public halls; court decisions in several states. J. Simpson. Munic J 39:617-19 O 21 '15

Use of patented articles: court decisions in the several states as to conditions under which cities may contract for patented pavements and other articles. J. Simpson. Munic J 38:13-15 Ja 7 '15

See also Building laws; Fire protection—Laws; Plumbing laws and regulations; Public health laws; Roller skating—Regulation; Sewerage—Laws; Street openings; Street traffic; Trees; Waterworks—Law

Municipal lighting plants. See Electric plants, Municipal

Municipal markets. See Markets, Municipal

Municipal motor trucks. See Motor trucks, Municipal

**Municipal officers**

Contracts by municipal officers. J. Simpson.

Munic J 39:807-8 N 25 '15

Experience of an engineer in public office. M. L. Cooke. Am Soc M E J 37:708-9 D '15

Training for the municipal service. C. L. King. Sci Am S 79:118-19 F 20 '15; Same cond. with discussion. Am Soc M E J 37:98-101 F '15

**Municipal ownership**

Detroit municipal ownership proposal. Elec Ry J 45:431 F 27 '15

Disadvantages. B. J. Arnold. Elec Ry J 46:911 O 30 '15

Municipal fertilizer plant at Los Angeles. B. A. Heinly. Eng N 73:1063-4 Je 3 '15

Municipal ownership and operation of waterworks: case for state control. M. N. Baker. Eng N 72:1115 D 3 '14

Municipal ownership growth. Munic Eng 49:79 Ag '15

Municipal trading; legal powers of cities to engage in plumbing, brick manufacture, quarrying and dealing in fuel, real estate and liquor. J. Simpson. Munic J 38:732-4 My 27 '15; Same abr. Munic Eng 49:24-5 JI '15

Philadelphia conference: criticism. H. G. D. Nutting. Elec R & W Elec'n 65:1145 D 12 '14

State control of city-owned utilities much needed. Eng N 74:658-9 S 30 '15

State regulation of municipally owned plants. C. M. Larson. Am Water Works Assn J 2:515-37 S '15

See also Asphalt plants, Municipal; Cement plants, Municipal; Electric plants, Municipal; Gas manufacture and works, Municipal; Government ownership; Government regulation of industry; Hydroelectric plants, Municipal; Markets, Municipal; Moving pictures, Municipal; Municipal government; Public service corporations—Regulation; Repair shops, Municipal; Street railroads, Municipal

Asphalt plants. See Asphalt plants, Municipal; Electric plants, Municipal; Hydroelectric plants, Municipal

**Municipal records**

Portland, Ore., bureau of photography. H. M. White. U Eng M 50:445-9 D '15

Record system in a smoke inspector's office. M. A. Rooney. Power 42:543-4 O 19 '15

Signal box records. P. I. Patton. Munic J 39:397-8 S 9 '15

Municipal repair shops. See Repair shops, Municipal

Municipal sanatoriums. See Sanatoriums, Municipal

**Municipal supplies**

Broader applications of chemistry by the municipality. H. W. Mahr. J Ind & Eng Chem 6:1030-2 D '14

Portland's municipal testing laboratory. H. White. U Eng M 50:445-9 D '15

Purchasing and distributing supplies in Cleveland. A. R. Callow. U Eng M 50:445-9 D '15

Municipal trading. See Municipal ownership

Munitions of war. See War materials

**Mural painting and decoration**

Mural painting in America, by E. H. Blashfield. Review by R. F. Bach. Arch Rec 37: 93-5 Ja '15

Villa Madama: text and measured drawings by Howard W. Germann. Il Arch Rec 37:26-47 Ja '15

See also Stucco

**Muscantine, Iowa**

City founded on sawdust; how part of Muscantine came to be built on such a foundation. diag map Eng Rec 71:496-7 Ap 17 '15

**Museums**

Making museums useful. H. I. Smith. diags Sci Am S 79:348-9 My 29 '15

See also Anthropology—Exhibitions; also Field museum of natural history

**Lighting**

Glare in museum galleries; the psychological factor in the lighting problem. B. I. Gilman. diags Arch Rec 38:262-80, 362-78 Ag-S '15

Museums, Art. See Art galleries

Museums, Children's. See Children's museums

**Mushrooms**

Mushroom Lorelei and its dangers. R. M. F. Berry. Sci Am S 80:263 O 23 '15

Raising mushrooms in a coal mine. S. C. Reynolds. Il Colliery 36:103 S '15

**Music**

Developments of the audion lamp—music from light. Elec R & W Elec'n 67:908-9 N 13 '15

See also Color music; Musical instruments

**Musical instruments**

Musical wogds. Sci Am S 78:355 D 5 '14

**Mechanical devices**

Device for the simultaneous playing of violin and piano. Il Sci Am 113:471 N 27 '15

**Musical pitch**

Musical pitch to the eleventh decimal. J. B. Taylor. Sci Am 112:389 Mr 27 '15

Optophone and musical pitch. H. H. Hawley. Sci Am 111:523 D 26 '14

**Musk**

Loss of weight of musk in a current of dry air. C. B. Bazzoni. diag J Fr Inst 180:468-9 O '15

**Mussels**

Our neglected aquatic foods. Sci Am 112:332 Ap 3 '15

**Mustard seed**

Production, botanical composition and volatile oil strength of American wild mustard seed. A. L. Winton and J. H. Bornmann. J Ind & Eng Chem 7:684-6 Ag '15

**Myrica rubra**

Coloring principle of myrica rubra—its azo-, sulfide- and nitro-dyestuffs. S. Satow. J Ind & Eng Chem 7:118-15 F '15

**N****Nails**

Electromagnetic nail packing machine. Il Iron Age 95:900-1 Ap 22 '15

Holding power of nails; abstract. Am Soc M E J 37:719-20 D '15

Internally fired nail bluing furnace. Il Iron Age 95:1295 Je 10 '15

New machine for making wire nails. Il diag Iron Age 95:792-3 Ap 8 '15

**Nameplates**

Making sectional molds for die-cast nameplates. E. K. Hammond. Il Mach 21:554-7 Mr '15

**Names**

Orthography in geography and biography. F. H. Teall. Inland Ptr 54:485-7 Ja '15

**Names, Geographical**

Problem in war names; Kiaochow. Sci Am 111:486 D 12 '14

**Naphthalene**

Coal gas residuals—Feld process. F. H. Wagner. Am Gas Inst Pro 9:pt 1, 340-61 '14;

Same cond. Am Gas Light J 101:306-7 N 18 '14; Same cond. Met & Chem Eng 12:698-9 N '14; Same cond. Sci Am S 80:317-18 N 18 '15; Discussion. Am Gas Inst Pro 9:pt 1, 361-7 '14

Combustion calorimetry and the heats of combustion of cane sugar, benzoic acid, and naphthalene. H. C. Dickinson. bibliog U S Bur Stand Bul 11:189-257 Mr 1 '15

**Narcotics**

How narcotics affect plants. Sci Am S 79: 267 Ap 24 '15

**Nashville, Tennessee****Water supply**

Repairing and waterproofing the Nashville water-works reservoir. W. W. Southgate. Il diags Eng N 78:849-52 My 6 '15

Nashville, Chattanooga & St. Louis railway Chattanooga creek bridge. C. H. Johnson. Il plan Ry Age 59:343-5 Ag 20 '15

**Natalite**

Natalite a gasoline substitute. Automobile 32: 1094 Je 17 '15

**National academy of sciences**

National academy of sciences and the national government. Sci Am 113:176 Ag 28 '15

Needs of the National academy of sciences. Sci Am 113:136 Ag 14 '15

Why we need a National academy of sciences. Sci Am 113:154 Ag 21 '15

**National association of builders exchanges**

Convention Columbus, O., Jan. 20-28. Bldg Age 37:33-7 Mr '15

**National association of corporation schools**

Annual convention at Worcester, Mass. Iron Age 95:1375 Je 17 '15

**National association of cotton manufacturers**

Annual meeting in Boston. Textile World 49: 198-232+ My '15

99th meeting; papers. Il Textile World 49:607-39 S '15

**National association of electrical inspectors**

Convention, New York city, March 23. Elec W 65:824 Mr 27 '15

Convention, New York city, March 23-25. Elec R & W Elec'n 66:601 Mr 27 '15

**National association of hosiery and underwear manufacturers**

11th annual meeting, Philadelphia, May 3-8. Textile World 49:232-44+ My '15

**National association of manufacturers**

20th annual convention, New York, May 25-26. Iron Age 95:1226-7 Je 3 '15

**National association of manufacturers of electrical supplies**

Electrical manufacturers make progress in organization plans. Elec R & W Elec'n 66: 232 F 6 '15

**National association of master plumbers**

Annual convention, Chicago, July 13-15. Heat & Ven 12:46-7 Ag '15

33d annual convention, Chicago, July 13-15. Metal Work 84:121-9 Jl 23 '15

33d annual convention; with account of Des Moines and Salt Lake City indictments, list of delegates, etc. Dom Eng 72:59-79 Jl 17 '15

**National association of master steam and hot water fitters**

Annual convention, Milwaukee, June 21-24. Metal Work 84:24-8 Jl 2 '15

27th annual convention, Milwaukee, June 21-24. Dom Eng 71:372-5 Je 26 '15

27th annual convention, Milwaukee, June 21-24, 1915. Heat & Ven 12:35-40 Jl '15

**National association of railway commissioners**

Annual meeting, San Francisco, Oct. 12-16. Ry Age 59:789 O 22 '15

27th annual convention, San Francisco, Oct. 12-16. Elec W 66:961 O 30 '15

**National association of scale experts**

11th semi-annual meeting at Chicago, Ill. Ry Age 58:269-70 F 12 '15

**National association of sheet metal contractors**

11th annual convention, Denver, June 7-11. Metal Work 83:890-8 Je 18 '15

Trade development committee meeting, Chicago, Nov. 12. Metal Work 84:880-1 N 19 '15

- National association of stationary engineers**  
33d annual convention, Columbus, O., Sept. 13-18. Power 42:462-3 S 28 '15
- National association of stove manufacturers**  
Convention, New York city, May 12-13. Metal Work 88:746 My 21 '15
- National association of wool growers**  
51st annual meeting at Salt Lake City, Nov. 12-14, 1914. Textile World 48:283-6 D '14
- National association of woolen and worsted overseers**  
List of members present at 32d annual meeting. Textile World 48:362-3 D '14  
33d semi annual meeting, Rocky Point, R. I., May 15. Textile World 49:391-2 J '15
- National automobile chamber of commerce**  
Chamber of commerce to defend Kardo patents suit. Horseless Age 34:339-30 D 9 '14
- National cash register company**  
Modern plating practice: a piecework system as used by the National cash register company. W. Fraine. II Metal Ind n s 13:1-4 Ja '15  
Research work at the National cash register company. H. G. Dorsey. II Sibley J 29:115-21 Ja '15
- National characteristics**  
Random reflections. Sci Am 112:326+ Ap 3 '15
- National civic federation**  
15th annual meeting. Elec R & W Elec'n 65:1142 D 12 '14  
Governmental versus private enterprise discussed. Elec W 64:1140-1 D 12 '14
- National commercial gas association**  
Minneapolis convention. Am Gas Light J 101:360-1, 377 D 7-14 '14
- National conference on city planning**  
Seventh conference in Detroit, June 7-9. Eng N 73:1190 Je 17 '15
- National district heating association**  
7th annual convention, Chicago, June 1-3. Dom Eng 71:285-7 Je 5 '15; Elec R & W Elec'n 66:1117-20 Je 12 '15; Elec W 65:1576-7 Je 12 '15; Heat & Ven 12:37-46 Je '15; Metal Work 83:353-5 Je 11 '15; Power 41:801-3 Je 22 '15
- National electric light association**  
Commercial section plans. Elec W 66:446-7 Ag 28 '15  
Constructive work before the N. E. L. A. H. H. Scott. Elec W 65:5-6 Ja 2 '15  
Convention, San Francisco, June 8-11. Elec Ry J 45:1106-9 Je 12 '15  
Future work of N. E. L. A. E. W. Lloyd. Elec W 66:155-6 JI 17 '15  
Meetings of N. E. L. A. executive committee. Elec W 65:186-7, 695-6; 66:906 Ja 16, Mr 13, O 23 '15  
N. E. L. A. rules to harmonize service requirements for motors. Elec W 66:93 JI 10 '15  
38th annual convention, San Francisco, June 7-11; abstracts of papers and reports. Power 41:858-60 Je 22 '15  
38th convention; abstracts of papers and reports. Elec R & W Elec'n 66:1107-13 Je 12 '15  
38th convention, San Francisco: abstracts of papers and discussions. Elec W 65:1502-34 Je 12 '15  
38th convention, San Francisco, June 8-11. Elec R & W Elec'n 66:1095-1104 Je 12 '15
- National electric light association, Iowa section**  
15th annual convention, Keokuk, April 20-22. Elec R & W Elec'n 66:816-20 My '15
- National electric light association, Michigan section**  
4th annual convention, June 26-30. Elec R & W Elec'n 67:27-30 JI 3 '15  
4th annual convention, June 26-30. Elec W 66:108-9 JI 10 '15
- National electric light association, New England section**  
New England question box convention. Elec R & W Elec'n 66:537-40, 598-600 Mr 20-27 '15  
New England section 7th annual convention. Elec R & W Elec'n 67:577-83 S 25 '15  
New England section 7th annual convention, Kineo, Me., Sept. 14-17. Elec W 66:680-1 S 25 '15
- National electric light association, Southeastern section**  
Southeastern section annual convention, Asheville, N. C., Sept. 22-24. Elec W 66:738-7 O 2 '15
- National electrical code**  
Changes in National electrical code. Elec W 65:578-80 Ap 3 '15  
National electrical code amended at conference in New York city. Elec R & W Elec'n 66:624-8 Ap 8 '15  
National electrical code wiring rules compared with the German and English rules. Elec R & W Elec'n 65:1081-9 D 5 '14  
Proposed changes in the code to be considered by electrical committee. Elec R & W Elec'n 66:337-40 F 20 '15  
Questions and answers on the National electrical code. See weekly numbers of Electrical review and western electrician  
Revising the code. Elec R & W Elec'n 66:613-14 Ap 3 '15  
See also Electric inspection
- National electrical contractors' association**  
Convention at San Francisco. Elec W 66:215-16 JI 24 '15  
16th annual convention, San Francisco, July 21-24. Elec R & W Elec'n 67:202-4 JI 31 '15
- National electrical safety code**  
Conference on safety code. Elec W 66:956-7 O 30 '15  
Criticism. C. L. S. Tingley. Elec Ry J 45:845 My 1 '15  
Defense of the Safety code. E. B. Rosa. Elec Ry J 45:939-41 My 15 '15  
Electrical safety rules issued. S. W. Stratton. Elec W 65:1102-5 My 1 '15  
National electrical safety rules. E. B. Rosa. Elec W 65:915-17 Ap 10 '15; Same. Elec Ry J 45:750-1 Ap 17 '15  
Opinions. C. L. Cadle; J. H. Hanna. Elec Ry J 45:1036 My 29 '15  
Proposed National electrical safety code. U S Bur Stand Circ 54:1-137 '15  
Proposed rules formulated by the Bureau of standards. E. B. Rosa. Elec W 65:845-7 Ap 3 '15  
Safety rules to be observed in the operation and maintenance of electrical equipment and lines. U S Bur Stand Circ 49:1-50 '14; Abstract. Elec R & W Elec'n 65:418-19 Ag 29 '14; Abstract. J. Fr Inst 178:350-4 S '14; Abstract. Power 40:806-7 D 8 '14  
Wisconsin considers safety rules. Elec W 66:959-60 O 30 '15
- National exposition of chemical industries**  
First exposition at the Grand Central palace, New York city, Sept. 20-25. Textile World 50:67-9 O 15 '15  
First exposition at the new Grand Central palace, New York city, Sept. 20-25. J Ind & Eng Chem 7:896-8 O 15 '15  
First National exposition at the Grand Central Palace, New York, Sept. 20. Eng & Min J 100:441 S 11 '15  
Program and list of exhibitors. Met & Chem Eng 13:574 S 1 '15  
Summary of exhibits and lists of papers read at first exposition. II Met & Chem Eng 13:690-700 O 1 '15  
Technical society meetings and lectures. Met & Chem Eng 13:629 S 15 '15
- National fire protection association**  
19th annual convention, New York, May 11-13. Elec W 65:1264-5 My 15 '15  
19th annual convention, New York, May 11-13. Eng Rec 71:667 My 22 '15
- National foreign trade convention, 2d**  
Export movement set forward at St. Louis. Iron Age 95:248-51+ Ja 23 '15  
Meeting at St. Louis, Jan. 21 and 22, 1915. Elec W 65:253-4 Ja 23 '15
- National forests.** See Forest reserves
- National founders' association**  
19th annual convention, New York, Nov. 17-18. Iron Age 96:1242-7 N 25 '15  
19th annual convention, New York, Nov. 17-18. Iron Tr R 57:1000-1, 1043-6 N 18-25 '15
- National garage association**  
Growth of the National garage association. Horseless Age 35:634-5 My 12 '15



- National guard (United States).** See United States—Militia
- National hardware association**  
Manufacturers and distributors of tin plate and sheet metal discuss business conditions. Metal Work 83:784-5 My 28 '15
- National independent telephone association**  
18th annual convention, Chicago, February 3 to 6. Elec R & W Elec'n 66:805-8 F 13 '15
- National industrial traffic league**  
Annual meeting, Chicago, Nov. 17-18. Ry Age 59:1004 N 26 '15
- National machine tool builders' association**  
13th semi-annual convention, Atlantic City, May 20-21. Iron Age 95:1173-8 My 27 '15  
14th annual convention, New York, Oct. 28-29. Iron Age 96:1060-3 N 4 '15  
14th annual convention, New York, Oct. 28-29. Iron Tr R 57:906-8 N 4 '15  
Spring convention, Atlantic City, May 20-21. Iron Tr R 56:1074-5 My 27 '15
- National metal trades association**  
Annual meeting in New York, April 14-15. Iron Age 95:890-3 Ap 22 '15  
17th annual convention, New York, April 14-15. Mach 21:769 My '15  
Steady progress in co-operation as indicated by reports at the annual convention of the National metal trades association. Iron Tr R 56:825-30 Ap 22 '15
- National municipal league**  
20th annual convention, Baltimore, Nov. 18-20, 1914. Munic J 87:812 D 3 '14
- National parks**  
Canada  
Parks in the Canadian Cordillera. J: A. Allan. Il Sci Am S 80:360-2 D 4 '15  
United States  
United States will capitalize its scenery. Il Eng Rec 72:568-70 N 6 '15  
See also Forest reserves; Rocky mountain national park; Yellowstone national park
- National pipe and supplies association**  
Annual convention, with list of those in attendance. Dom Eng 71:229-31 My 22 '15
- National plumbing code, Need of.** F. J. Hanley. Dom Eng 72:176-8 Ag 7 '15
- National rivers and harbors congress**  
11th annual convention, Washington, Dec. 9-11, 1914. Eng Rec 70:sup295-6 D 19 '14
- National road.** See Cumberland road
- National safety council**  
Annual congress; railroad section. Ry Age 59:813-16 O 29 '15  
Convention at Philadelphia, Oct. 19-21. Iron Age 96:982-3 O 28 '15  
4th annual congress, Philadelphia, Oct. 19-21. Elec R & W Elec'n 87:804-5 O 30 '15  
Fourth congress, Philadelphia, Oct. 19-21. Elec Ry J 46:905 O 30 '15
- National scrap iron and steel association**  
Scrap dealers: perfect national organization. Iron Tr R 56:281 Ja 28 '15
- National security league**  
Naval and military exhibit of the National security league. Il Sci Am 112:626 Je 26 '15
- National silk convention**  
First national silk convention, Paterson, N. J., Oct. 12-14. Textile World 50:191-6 N '15
- National supply and machinery dealers' association**  
Annual convention, Philadelphia, June 3-4. Iron Age 95:1290-3 Je 10 '15  
Meeting, New York, Oct. 28. Iron Age 96:1101-3 N 4 '15  
Meeting, New York, Oct. 28. Iron Tr R 57:908-9 N 4 '15
- National tube company**  
Panama-Pacific exposition. Il Power 42:586-8 O 26 '15
- National warm air heating and ventilating association**  
Annual meeting, Detroit, Mich., June 9. Metal Work 83:399-301 Je 18 '15  
Discussion on warm air heating. Metal Work 83:335-6 F 28 '15
- Regulating warm air furnace practice: tentative recommendations for a standard of procedure.** Metal Work 83:646-8 Ap 30 '15
- Natural gas.** See Gas, Natural
- Natural history museums.** See American museum of natural history; Field museum of natural history
- Natural resources**  
See also Forests and forestry; Mineral lands: Mines and mineral resources; Water power
- Natural steam.** See Steam, Natural
- Naval advisory board.** See United States—Naval consulting board
- Naval architects and marine engineers, Society of.** See Society of naval architects and marine engineers
- Naval architecture**  
Cable-repairing steamer "Transmitter." F. C. Coleman. Il plan Int Marine Eng 20:382-6 S '15  
Calculations for ships' forms; light thrown by model experiments upon resistance, propulsion and rolling of ships. D. W. Taylor. Int Marine Eng 20:443-5 O '15 (to be cont)  
Emergency exit from boiler rooms. Il Sci Am 113:201-4 S 4 '15  
Expansion or contraction of dimensions and the effect upon resistance. H. C. Sadler. diags Int Marine Eng 20:11-14 Ja '15  
Experiments with models having radical variations of after sections. D. W. Taylor. Int Marine Eng 20:14-16 Ja '15  
Fire-room emergency escape. diags Int Marine Eng 20:410-12 S '15  
Institution of naval architects; spring meeting. Engineer 119:299-301, 334-7 Mr 26-Apr 2 '15  
Japanese liner Fushimi Maru. Il plan Int Marine Eng 20:311-12 Jl '15  
Rules for freeboard. Engineer 119:333-4 Ap 2 '15  
Southern Pacific ferry steamer Alameda. E: W. Olin. Il plans Int Marine Eng 20:194-8 My '15  
Steamer Emblane. Il plans Int Marine Eng 20:297-8 Jl '15  
Steamship design; a method of determining the principal dimensions. H. A. Everett. Int Marine Eng 20:436-40 O '15  
S. S. Great Northern and Northern Pacific for the Spokane, Portland & Seattle railway company. Il diags plans Int Marine Eng 18:535-45 D '14  
Turbine passenger steamships Great Northern and Northern Pacific. Il plan (supp) Engineer 120:129-31 Ag 6 '15  
Typical ships. Il diags plan (supp) Engineer 117:366-70; 118:229-32, 359-62, 673-5 Ap 8, S 4, O 16, D 18 '14  
Western river steamers and barges. E. A. Burnside. Il plan Int Marine Eng 20:478-87 N '15  
See also Car ferries; Coaling vessels; Ferryboats; Freight ships; Hydroplanes; Launching; Light ships; Motor barges; Motor ships; Propellers; Revenue cutters; Schoolships; Ship resistance; Shipbuilding; Ships; Snag boats; Steamboats; Submarine boats; Tank ships; Torpedo boat destroyers; Towboats; Warships
- Deckhouses**  
Scantlings on light superstructures; with discussion. J. Montgomery. Engineer 119:334-5 Ap 2 '15
- Subdivisions**  
Application of subdivision rules adopted at International conference; abstract. J. Donald. Int Marine Eng 20:9 Ja '15  
Report of the departmental committee on bulkheads. Engineer 119:37-8 Ja 8 '15  
Water-tight subdivision of ships. J. J. Welch. Engineer 119:318-19; Discussion. 119:300 Mr 26 '15
- Naval art and science**  
See also Coaling at sea; Mines, Submarine; Range finders; Submarine boats; Target practice; Torpedoes; United States—Navy; Warships; also European war—Naval operations

Naval artillery. See Naval guns

#### Naval battles

- Action in which the *Carmania* sank the *Cap Trafalgar*. *Il Sci Am* 111:449 D 5 '14
- Battle of the North sea. *Il Sci Am* 112:136-7 F 6 '15
- Fight between the *Constitution* and the *Guerrière*. *Il Sci Am* 113:14-15 JI 3 '15
- Wrecking of the cruiser *Emden* by shell fire. *Il Sci Am* 113:376 O 30 '15

Naval consulting board. See United States—Naval consulting board

#### Naval education

- More military and naval academies. R. S. Spear. *Sci Am* 113:9 JI 3 '15

Naval engineering. See Marine engineering

Naval gunnery. See Gunnery

#### Naval guns

- Fifteen-inch versus fourteen-inch naval guns. S. L. Sayre. *Sci Am* 113:181 Ag 28 '15
- Hitting an invisible ship at a ten-mile range. *Il Sci Am* 112:218-19 Mr 6 '15
- Manufacture of English 12-inch guns. C. F. Jeansen. *Il Sci Am* 113:401 D 4 '15
- Sponson mounting for guns. T. W. Brown. *Sci Am* 113:487 D 4 '15
- Weight of metal versus volume of fire. *Sci Am* 112:172 F 20 '15
- Which is the most powerful battleship? J. B. Walker. *Il diags Sci Am* 113:80-1 JI 24 '15

Naval invention boards. See Great Britain—Admiralty inventions board; United States—Naval consulting board

Naval reserve. See United States—Navy

#### Naval stores

- Contributions of the chemist to the naval stores industry. J. E. Teeple. *J Ind & Eng Chem* 7:931-2 N '15
- Naval stores industry. A. W. Schorger and H. S. Betts. *diags Il pls maps U S Agric Bul* 229:1-58 '15

#### Navies

- Auxiliary naval vessels; classification of naval vessels—description of the destroyer tender *Melville*. *Il Int Marine Eng* 20:295-7 JI '15
- Revolutionizing naval construction. *Sci Am* 113:286 O 2 '15
- Rival navies. *Engineer* 119:16-17 Ja 1 '15
- See also Hospital ships; Naval yards and naval stations; Submarine boats; Warships; also names of countries, subhead Navy, e. g. United States—Navy

#### Navigation

- Electric shriek to warn mariners: Blériot air siren. *Il Sci Am* 112:200 F 27 '15
- Suction between passing ships. S. A. Reeve. *diags Sci Am* S 79:30-2, 46-8, 62-4 Ja 9-23 '15
- See also Aeronautics; Buys; Collisions at sea; Commerce; Fog signals; Lifeboats; Lighthouses; Safety at sea; Ship resistance; Shipping; Ships; Shipwrecks; Sounding; Submarine boats; Submarine signals; Yachts

Navy advisory board. See United States—Naval consulting board

#### Navy yards and naval stations

- Concrete pile and cylinder foundations at Charleston. *Il diag Eng N* 74:926-9 N 11 '15
- Giant German and Austrian cranes. F. C. Perkins. *Il Sci Am* S 80:145, 148 S 4 '15
- Kiel; its naval and engineering features. A. W. Metcalfe. *diags Engineer* 120:50-2 JI 16 '15; Same cond. *Sci Am* S 80:234 O 9 '15
- Shipbuilding in navy yards. *Int Marine Eng* 20:224-5 My '15
- Torpedo-boat berth at the Charleston navy yard. *Il plan Eng N* 74:872-3 N 4 '15

#### Neatness

- Value of neatness. *Il Ry Age* 58:467-8 Mr 12 '15

#### Negotiable Instruments

- Negotiable paper. S. Walton. *J Account* 20:58-61 JI '15
- Use of trade acceptances in business. El. F. DuBrul. *Am Ind* 16:26-7 N '15
- See also Bills and notes; Checks; Commercial law

#### Neon

- Comparisons of lengths of light waves by interference methods, and some wave

lengths in the spectrum of neon gas. W. F. Meggers. *U S Bur Stand Bul* 12:198-206 N 8 '15

Neon light tubes. J. Boyer. *Il Sci Am* S 78:410 D 28 '14

Notes on the noble gases. W. S. Andrews. *Gen Elec R* 13:408 My '15

#### Nepal

Country inaccessible to Europeans. H. J. Elwes. *Il Sci Am* S 79:357-9 Je 5 '15

#### Nephelometry (photometric analysis)

History of method and development of instruments. P. A. Kober and S. S. Graves. *diags J Ind & Eng Chem* 7:843-7 O '15

Nephelometric estimation of phosphorus. P. A. Kober and G. Egerer. *Am Chem Soc J* 37:2373-81 O '15

Nephelometric estimation of purine bases, including uric acid, in urine and blood. S. S. Graves and P. A. Kober. *Am Chem Soc J* 37:2430-47 O '15

#### Neponset river

Cost data on the work of improving the Neponset river in Massachusetts. E. M. Blake. *Il Eng & Contr* 43:34-6 Ja 13 '15

Neponset river reclamation. W. B. Conant. *Il Munic J* 39:254-5 Ag 19 '15

#### Nervous system

##### Diseases

Nerves and the war. A. Eulenburg. *Sci Am* 112:214 Mr 6 '15

See also Neuralgia

#### Nests

Insects' nests. *Il Sci Am* S 80:212-13 O 2 '15

Net fabric. See Knit goods

#### Netherlands

Flooding the sea with concrete. W. J. L. Kiehl. *Il Sci Am* 113:461 N 27 '15

##### Industries and resources

Supply of the Netherlands with electric energy. *Elec R & W Elec'n* 67:30 JI 3 '15

#### Neumann's method

Factor to be used for the calculation of the phosphoric acid in Neumann's method. S. L. Jodidi and E. H. Kellogg. *J Fr Inst* 180:349-67 S '15

#### Neuralgia

Cause of neuralgia. L. K. Hirschberg. *Sci Am* 111:605 D 19 '14

Neutral zone. See Heating—Tables, calculations, etc.

#### Nevada

See also Geology—Nevada; Mines and mineral resources—Nevada

#### Nevada (battleship)

United States dreadnought Nevada. *Il Sci Am* 113:424 N 13 '15

#### New England association of gas engineers

45th annual meeting, Boston, Feb. 13, 1915. *Am Gas Light J* 102:121 F 22 '15

History of the first American gas association. E. C. Learned. *Am Gas Light J* 102:129-35 Mr 1 '15

New England question box convention. See National electric light association, New England section

#### New England water-works association

34th annual convention, New York city, Sept. 7-9. *Eng N* 74:566-8 S 18 '15

34th annual convention, New York city, Sept. 7-9. *Munic J* 39:443-6 S 16 '15

#### New Jersey

##### Coast

Coast erosion and protection on Long Island and New Jersey. G. O. Case. *map Eng N* 74:348-51, 388-91, 438-42 Ag 19-S 2 '15

#### New Jersey society of sanitary engineering

Organization. *Dom Eng* 71:184 My 15 '15

2d quarterly meeting, Paterson, N. J., Oct. 30. *Dom Eng* 73:185 N 6 '15

2d quarterly meeting, Paterson, Oct. 30. *Metal Work* 84:598-7 N 5 '15

#### New Jersey state association of master plumbers

14th annual convention, Trenton, N. J., May 25-27. *Dom Eng* 71:282-4 Je 5 '15

14th annual convention, Trenton, May 25-27. *Metal Work* 83:821-2 Je 4 '15

**New Jersey zinc company**

Accident prevention by the New Jersey zinc co. B. F. Tillson. Eng & Min J 98:1034-9 D 12 '14

**New London, Connecticut****Bridges**

New Haven road to build new Thames river bridge. Eng N 74:1063 N 25 '15

**Wharves**

Connecticut shipping terminal at New London. W. E. Clarke. II diag Eng N 74:1028-32 N 25 '15

**New Mexico****Antiquities**

Curiosities of bygone ages: relics from New Mexico and from Bible lands. II Sci Am 112: 87 Ja 23 '15

Prehistoric irrigation canal in New Mexico. S. M. Johnson. II Eng N 73:561 Mr 25 '15

**Industries and resources**

Geology of the Burro mountains copper district, New Mexico. R. E. Somers. II maps Am Inst Min E Bul 101:957-96 My '15; Discussion. 108:2476 D '15

Meerschaum deposits of New Mexico. F. V. Bush. II map Eng & Min J 99:941-3 My 29 '15

*See also* Mines and mineral resources—New Mexico

**New Orleans****Architecture**

Post office, New Orleans. J. G. Rogers. II Arch & Bldg 47:131-6 Ap '15

**Hurricane, 1915**

Engineering aspects of New Orleans hurricane. W. H. P. Creighton. Eng N 74:710 O 7 '15

Meteorology of West Indian hurricane, Sept. 22-Oct. 2. Eng N 74:710-12 O 7 '15

New Orleans record for succession of storms broken. map Eng Rec 72:562-3 N 6 '15

Performance of the New Orleans water, sewerage and drainage systems during the recent hurricane. G. G. Barl. Eng & Contr 44:387-9 N 17 '15

Structural damage slight in New Orleans storm. J. F. Coleman and W. H. P. Creighton. Eng N 74:765-6 O 14 '15

**Sanitary affairs**

Concrete a plague-eradicator in New Orleans. H. P. Letton. Eng Rec 71:325-6 Mr 13 '15

**Sewerage**

Method and cost of making house connections to the New Orleans sewerage system. Eng & Contr 42:303-4 Ag 26 '14

**Sewerage and water board**

Water and sewer maintenance in New Orleans. II Munic J 39:354-6 S 2 '15

**Water supply**

New Orleans water consumption. Munic J 39: 255-6 Ag 19 '15

**Wharves**

Concrete warehouses and terminal plant at New Orleans will cover 100 acres. II plan Eng Rec 71:402-3 Mr 27 '15

Cotton warehouse and terminal at New Orleans. diag Eng N 73:1217 Je 24 '15

**New Philadelphia, Ohio**

Causeway at New Philadelphia, Ohio. E: Stin-gel. II diag Eng Rec 71:78-9 Ja 16 '15

**New York (city)**

City planning in Queens borough, New York. F. B. Tucker. map Eng N 74:638-41, 689-91 S 30-O 7 '15

Plan for the improvement of Hell Gate, East river. C. D. Ward. map Sci Am 112:432 My 8 '15

**Aquarium**

Collections of the New York aquarium. R. W. Shufeldt. II Sci Am S 80:52-3 Ji 24 '15

**Architecture**

Architectural treatment of special elevated stations of the dual system, New York city. S. J. Vickers. II Am Inst Arch J 3:501-2 N '15

Circle building, New York. II plan Arch & Bldg 47:282-8 Ag '15

*See also* Equitable building; Morgan building; Woolworth building

**Bridges**

Double-deck swingbridge floated in place. II Eng N 74:437 S 2 '15

Draw span of Harlem river bridge floated to place. II Eng Rec 72:298-9 S 4 '15

Erecting the largest steel arch bridge in existence, Hell Gate, New York. II Sci Am 112: 193 S 4 '15

Erection at Hell Gate arch checks calculations. II Eng Rec 72:220-1 Ag 21 '15

Erection of the world's greatest steel bridge at Hell Gate. II Iron Tr R 57:944-5 N 11 '15

Fabricating steelwork for the Hell Gate arch. II Eng Rec 70:684-6 D 26 '14

Heavy travelers erect Hell Gate arch over East river. II Eng Rec 71:568-70 My 1 '15

Hell-Gate arch bridge and the New York Connecting railroad. II diag map Ry R 57: 453-61 O 9 '15

Hell Gate arch erection from Ward's Island started; views. Eng Rec 71:789 Je 19 '15

Largest arch bridge in the world; Hell Gate bridge. II Sci Am 113:340-1 O 16 '15

977-ft. Hell Gate bridge becomes an arch. II Eng N 74:708-9 O 7 '15

Progress on Hell Gate bridge. II Eng N 74: 386-7 J 29 '15

Progress on the Hell Gate bridge. II Ry Age 59:865-7 N 6 '15

Record set for weight of steel erected in one day at Randall's island on Hell Gate bridge approach. II Eng Rec 71:399-400 Mr 27 '15

Six etchings of Brooklyn bridge, by H. De Ville; text by M. Stapley. Arch Rec 38:583-91 N '15

Wood block and granite for bridge floors. E: A. Byrne. II diag Munic Eng 48:387-9 Je '15

World's longest arch, across Hell Gate, New York city, is closed and swung as planned. II Eng Rec 72:438-40 O 9 '15

**Buildings, Bureau of**

New system of filing building plans saves time. Eng Rec 72:598 N 13 '15

**Clubs**

Addition to the New York Harvard club. J: T. Boyd, jr. II diag Arch Rec 38:615-30 D '15

Yale club's new house. M. Wilcox. II plans Arch Rec 38:310-42 S '15

**Court house**

Daylighting facilities of new court house. L. B. Marks and J. E. Woodwell. Illum Eng Soc 9:661-6 no 7 '14

**Education**

Learning through doing. Sci Am 112:624 Je 26 '15

**Employees**

Standardizing engineering positions and salaries in New York city. Eng N 73:54-5 Ja 14 '15

**Lighting**

High intensity street lighting of European cities compared with New York. C. F. La-combe. II Illum Eng Soc 9:614-32 no 7 '14

**Maps**

City planning in Queens borough, New York. F. B. Tucker. maps Eng N 74:689-91 O 7 '15

First complete official map of New York city. II Eng Rec 71:666-7 My 22 '15

Mammoth new map of the city of New York. Eng N 73:991-2 My 20 '15

New York city's twenty-five foot map. C: W. Person. II Sci Am 112:375 Ap 24 '15

**Ordinances, etc.**

New electrical code for New York. Elec R & W Elec'n 67:756-7 O 23 '15

Regulations governing refrigerants in New York city. Power 40:862 D 15 '14

## New York (city)—Continued

## Police

Future of the police arm from an engineering standpoint; with discussion. H. Brûere. *Am Soc M E J* 87:77-81 F '15; Same, *Sci Am S* 79:174-5 Mr 13 '15

## Public service commission laboratory

Standard practice instructions for concrete testing laboratory. R. E. Goodwin. *Eng N* 73:202-8 F 4 '15

## Public works

New municipal asphalt plant for borough of Manhattan. H. W. Durham. *Eng N* 73:1074-7 Je 3 '15

## Railroads

Developments at the Grand Central terminal in New York. *Eng N* plan Ry R 57:22J-34 Ag 21 '15

New York freight terminals, 1914. Ry Age 59: 395-7 Ag 27 '15

## Rapid transit

Brooklyn bridge subway connection, New York city. *Eng N* map Eng Rec 71:76-7 Ja 16 '15

Design of steel elevated railways, N. Y. rapid transit system. M. E. Griest. *Eng N* 73:871-7 My 20 '15

Detail and fabrication of Harlem river tubes. T. Duckworth. *Eng Soc W Pa* 31: 533-60; Discussion. 31:560-83 O '15

Development of New York's rapid transit system resulting in dual contracts. map Eng Rec 72:572-4 N 6 '15

Downtown union subway station, New York city. *Eng N* 74:333 Ag 12 '15

East river tunnel shields. *Eng N* 74: 952-5 N 11 '15

Electric equipment of Belmont tunnel cars. *Eng N* 74:764-5 Ap 17 '15

Every type of subway construction but air tunnel used on Harlem river section. *Eng N* 74:616-19 My 15 '15

Harlem river four-track subway tunnel. O. Hoff. *Eng N* map Eng Soc W Pa 31: 517-37; Discussion. 31:571-83 O '15

How some problems in the New York elevated improvement work were solved. *Eng N* 74:781-3 Je 19 '15

Laying new track under an old elevated railway platform. *Eng N* 73:1180-1 Je 17 '15

Mile and a half of track on New York elevated line rebuilt in fourteen days. *Eng N* 73:363-4 S 18 '15

New subway and elevated car of the New York municipal railway corporation. *Eng N* 73:208-13 F 13 '15

New York municipal car. *Eng N* map Elec Ry J 43:1261-7, 1327-38; 44:1376-81; 45:496-503, 872-80 Je 6-13, D 26 '14, Mr 13, My 8 '15

New York rapid transit railway extensions. F. Lavis. *Eng N* 72:665-70, 728-34, 782-8, 858-63, 950-2, 973-8, 1068-71, 1104-9, 1160-5, 1206-10, 1250-4, 1294-8 O 1-15, 29-N 12, 28-D 31 '14

New York subway tapped for new connections while carrying heavy traffic. *Eng N* 73:255-7 Ag 28 '15

New York transit contracts. *Eng N* 70:862 D 19 '14

Ornamental concrete elevated railway, New York city. M. E. Griest. *Eng N* 74: 913-18 N 11 '15

Overcrowding and health. *Sci Am* 112:244 Mr 13 '15

Progress on the dual subway system, New York city. Ry R 56:118-19 Ja 23 '15

Railroads under and over the streets of New York. *Eng N* 73:113-6 F 13 '15

Rapid steel erection on third track work, Second avenue elevated, New York. *Eng N* 73:136-7 Ja 16 '15

Rebuilding elevated railways in New York city. *Eng N* map Eng N 74:625-30, 633-7 S 30-O 7 '15

Section of New York elevated rebuilt under heavy traffic without an accident. *Eng N* 72:470-2 O 16 '15

Short subway section in New York involves many difficulties of design. J. Glaser. *Eng N* 71:448-51 Ap 10 '15

Starting six tubes for two new East river subway crossings in New York. *Eng N* 71:810-12 Je 20 '15

Stations for third track, New York elevated, placed above existing platforms. *Eng N* 72:133-9 J1 31 '15

Steel shields protect traffic during removal of New York subway roof. *Eng N* 72:110-13 J1 24 '15

Subway ventilation schemes. *Eng N* 72:13-16 Ag '15

Travel on New York transit lines and steam railroads. Elec Ry J 45:134 Ja 18 '15

Typical and special construction used on Queens extension to New York elevated. *Eng N* 72:76-8 J1 17 '15

See also New York railways

## Real estate

New York tax list: fluctuation of real estate values due to lack of regulation of the character of buildings. *Am Inst Arch J* 2:572-3 D '14

## Sanitary affairs

New methods of odor elimination at garbage plants indicated by New York tests. I. S. Osborn. *Eng N* 72:16-17 J1 3 '15

New York city sanitary code. Metal Work 83: 348 Mr 5 '15

New York city street-cleaning dumping dock completed. *Eng N* 74:958 N 11 '15

Reduction of New York's garbage. *Eng N* map Munic J 39:35-9 J1 8 '15

## Sewerage

Construction of the Metcalf ave. sewer, borough of the Bronx. G. L. Christian. *Eng N* 72:1164-7 D 10 '14

Design and construction features of reinforced concrete sewer siphons under New York subway. T. L. Wilson. *Eng & Contr* 43:128-9 F 10 '15

Disposal of Greater New York's sewage; general plans. C. E. Gregory. *Munic J* 39:692-4 N 4 '15

Main drainage works proposed for New York. G. A. Soper. *Eng N* map Boston Soc C E J 1:31-66 F '14

## Streets

Manhattan pavements limited to three standard types. H. W. Durham. *Eng N* 71:202-3 F 13 '15

Methods introduced in New York last winter cut cost and increased speed of snow removal. J. T. Fetherston. *Eng N* 71:640-1 My 22 '15

New York city experience with asphalt block pavements. E. J. Morrison. *Eng N* 73:645-6 Ap 1 '15

New York street cleaning. *Munic J* 39:842-4 D 2 '15

New York's snow removal plans. *Munic J* 37:827-9 D 10 '14

Snow removal in New York. *Munic J* 38: 805-7 Je 10 '15

Street cleaning in New York. *Eng N* 74: 46-8 Ja '15

Street work in New York. *Munic J* 39:3-4 J1 1 '15

Underground pipes in New York city streets. *Eng N* 74:280-1 Ag 5 '15

Value of paving materials disclosed by two years' service test. H. W. Durham. *Eng N* 71:203-4 F 13 '15

## Subway collapse, 1915

Collapse of streets in New York city during subway construction. *Eng N* 74:424 O 2 '15

Collapse of the subway work on Seventh avenue. *Sci Am* 112:295 O 2 '15

Comparative timbering costs in mine and subway. *Eng N* 73:689-90 O 23 '15

Danger of collapse in subways is not general. F. Lavis. *Eng N* 74:666-7 S 30 '15

Dynamite explosion causes new subway cave-in in New York. *Eng N* 74:631-2 S 25 '15

Not merely mining but bridge building; the importance of diagonal bracing in subway timbering. *Eng N* 73:324 O 9 '15

New York (city)—Subway collapse—*Continued*. Proper timbering would have prevented subway collapse. J. Seward. Eng N 74:758-9 O 14 '15

Public-service engineers on New York subway accidents. Eng N 74:762-8 O 14 '15  
Recommendations for safety of subway timbering. Eng N 74:716 O 7 '15

Rock slide causes second collapse of subway decking. Eng Rec 73:429+ O 2 '15

Rock slides greatest menace to New York subway work; report of E. S. Davis and H. H. Quimby. Eng Rec 73:461+ O 9 '15

Subway timbering accidents; two New York streets fall. 11 diag Eng N 74:662-6 S 30 '15

Timbering in New York subway. J. Seward; P. E. Barbour. Eng & Min J 100:636-7 O 28 '15

Timbering in the New York subway. P. E. Barbour. 11 diag Eng & Min J 100:568-70 O 2 '15

#### Subway fire, 1915

Disastrous burnout in a subway manhole. Sci Am 112:86 Ja 16 '15

Subway fire inquiry and orders. Elec Ry J 45:148-9 Ja 16 '15

Unjust criticism of the subway system of New York. Sci Am 112:62 Ja 16 '15

Where the smoke helmet would be invaluable: a lesson from the New York subway fire. 11 Sci Am 112:65 Ja 16 '15

#### Water supply

Conditions encountered and methods employed in laying water pipes in the congested streets of New York city. M. Blatt. Eng & Contr 44:246-7 S 29 '15

Improving sanitary conditions on the Ashokan reservoir watershed. G. G. Honness. Eng & Contr 44:213 S 15 '15

Maintenance of the water supply distribution system of New York city. W. W. Brush. 11 maps Am Water Works Assn J 2:206-37 Mr '15; Same cond. Eng & Contr 44:44-7 J1 21 '15; Discussion. F. B. Nelson. Am Water Works Assn J 2:306-10 Je '15

See also Catskill Aqueduct

#### Wharves

Congestion of freight at New York piers. 11 Int Marine Eng 20:80 F '15

Hunt's Point terminal in New York involves difficult bulkhead construction. 11 diag map Eng Rec 72:104-6 J1 24 '15

New York's new piers. 11 diag Engineer 120: 193-5, 204 Ag 27 '15

Notable step in the building of New York's great piers. R. G. Skerrett. 11 Sci Am 113: 160-1 Ag 21 '15

Steamship terminal in the Bronx. 11 diag maps Sci Am 112:80-1 Ja 23 '15

#### New York (state)

See also Roads—New York

#### Constitution

Committee of engineers recommends amendments to the New York constitution. Eng N 73:842 Ap 29 '15; Same. Eng & Contr 43:421-2 My 12 '15; Same. Eng Rec 71:561-2 My 1 '15

Engineers and the New York state constitutional convention. Eng N 73:802-3 Mr 25 '15

Engineers discuss changes in New York state constitution. Eng Rec 71:382 Mr 20 '15

Engineers present open letter to chairman of New York constitutional convention. Elec R & W Elec'n 67:484 S 11 '15

Engineers' recommendations for amendments to the New York constitution. Eng N 73: 834-6 Ap 29 '15

#### Highway department

Need, preparation and utility of statistical records in a highway department. P. P. Farley. Eng & Contr 44:187-9 S 8 '15

State-wide survey locates road-making materials in New York. Eng Rec 71:488-9 Ap 17 '15

New York Central & Hudson River railroad Annual report. Ry Age 58:683-5, 722-4 Mr 26 '15  
Electrification. E. B. Katta. W Soc E J 20:318-22 Ap '15

Rail sections as one element in steam and electric traction. P. H. Dudley. diag Gen Elec R 17:1036-46 N '14; Same. Sci Am S 78:362-3, 370-1 D 5-12 '14

New York connecting railroad Construction. 11 diag map Ry Age 59:421-5 S 3 '15

Hell-Gate arch bridge and the New York connecting railroad. 11 diag map Ry R 57: 453-61 O 9 '15

New York electric railway association 33d annual convention, June 29-30. Elec Ry J 46:14-20 J1 3 '15

20th quarterly meeting at Lake George, March 2-3. Elec Ry J 45:464-7 Mr 6 '15

New York master printers' association Address to the members of the New York master printers' association. C. F. Crawford. Inland Ptr 54:819-20 Mr '15

New York, New Haven & Hartford railroad Annual report for the year ending June 30, 1915. map Ry Age 59:790-2, 830-6 O 29 '15

Conditions affecting the success of main line electrification. W. S. Murray. 11 Am Inst E E Pro 34:1873-1913 Ag '15; Same. J Fr Inst 179:513-57 My '15; Same cond. Elec Ry J 45: 229-31 Ja 30 '15; Same cond. Ry Age 58:923-8 Ap 30 '15; Discussion. Am Inst E E Pro 34: 1913-32 Ag '15; Same. J Fr Inst 180:75-99 J1 '15

Electrification. W. S. Murray. W Soc E J 20: 322-7 Ap '15

New England and the New Haven road. H. Elliott. Ry Age 58:881-2 Ap 23 '15

New Haven operating results. Elec Ry J 46: 101-2 J1 17 '15

New Haven road to build new Thames river bridge. Eng N 74:1053 N 25 '15

Overhead contact systems, construction and costs. E. J. Amberg. pls Am Inst E E Pro 34:1255-66 Ja '15; Abstract. Elec Ry J 46:56 J1 10 '15

New York public service commissions New York commissions. Elec W 65:375 F 6 '15  
Public service commission inquiry. Elec Ry J 45:302, 389, 430-1, 477, 521 F 6, 20-Mr 13 '15

New York railways Annual report for the fiscal years ended June 30, 1914 and 1915. Elec Ry J 46:885 O 23 '15

New York state association of master plumbers 27th annual convention, Syracuse, March, 1915. Dom Eng 70:348-50 Mr 13 '15

27th annual convention, Syracuse, March, 1915. Metal Work 83:443-4 Mr 10 '15

New York state barge canal Barge canal navigation aids. Eng N 74:263 Ag 5 '15

Concrete construction on the New York state barge canal. G. C. Mills. 11 diag Concrete Cern 6:205-7 Ap '15

Concrete plant for Barge canal lock. 11 diag Eng N 73:1078-9 Je 3 '15

Construction of the Barge canal crossing of Oak Orchard creek. E. Low. 11 diag Eng N 73:430-2 Mr 4 '15

Cost of the Erie barge canal. H. G. Moulton. Ry Age 59:91-2 J1 16 '15

Cost of the New York barge canal. Eng N 73: 178-9 Ja 28 '15

Low headway on the New York barge canal as a hindrance to traffic. F. L. Neall. Eng N 72:1226 D 17 '14

New York barge canal, in miniature, operates at exposition. 11 Eng Rec 71:539 Ap 24 '15

Waterway rivaling in some respects the Panama canal. R. F. Yates. 11 map Sci Am 111: 492-3 D 12 '14

Waterways from the Great Lakes to the Atlantic. Eng N 73:132-3 Ja 21 '15

New York state conference of mayors Sixth annual conference, June 1-3. Munic J 38: 819-20 Je 10 '15

New York state motor federation New state federation formed in New York. Horseless Age 34:863-4 D 16 '14

New York state railways Results obtained by instruction department, New York state railways, Rochester lines. G. Lawson. Elec Ry J 45:867-9 F 20 '15

**New York times**

Use of electricity in a newspaper plant: motor and control equipment for production of New York times. *Il Elec W* 65:1627-31 *Je* 19 '15

**New York, Westchester and Boston railway**

Catenary construction. S. Withington. *Il diag plans J Fr Inst* 178:705-42 *D* '14

Construction, maintenance and cost of overhead contact systems; catenary construction. F. Zogbaum. *Am Inst E E Pro* 34:1267-81 *Ja* '15; *Abstract. Elec Ry J* 46:56-7 *Jl* 10 '15

Saving power by watt-meter records. *Elec Ry J* 46:823-3 *O* 16 '15

Signal maintenance methods. *Il Elec Ry J* 45:561-5 *Mr* 20 '15

**New York zoological park**

Rare amphibians at the New York zoological park. *Il R. L. Ditmars. Sci Am S* 80:196 *S* 25 '15

**New Zealand**

See Hydroelectric plants—New Zealand

**Newark, New Jersey**

Proposed new charter for Newark. *Munic Eng* 49:140 *O* '15

Three years' growth of street traffic in Newark. H. Bartholomew. *Eng N* 74:538-9 *S* 18 '15

**Rapid transit**

Newark railway terminal and utilities building. *Il plans Eng N* 74:836-40 *O* 28 '15

Newark terminal to relieve traffic congestion. *diag maps Eng N* 74:880-2 *O* 7 '15

**Sewerage**

New methods of pneumatic tunneling aid safe and rapid completion of Passaic valley sewer contract. *Il diag Eng Rec* 71:130-3 *Ja* 30 '15

**Water supply**

Unique water-supply. *Il Eng N* 73:863-5 *My* 6 '15

**Wharves**

Newark is rapidly creating its own water terminal in New Jersey meadows. *Il diag plan Eng Rec* 72:201-3 *Ag*-14 '15

**Newell, Frederick Haynes, 1862-**

New professor of civil engineering, University of Illinois. *por Ry R* 56:862-3 *My* 15 '15; *Munic Eng* 48:813 *My* '15

**Newfoundland**

Newfoundland's mineral resources. P. B. McDonald. *map Eng & Min J* 100:674-5 *O* 23 '15

**News associations. See Associated press****Newspaper offices**

News-press building, St. Joseph, Mo.; views and plans. *Arch Rec* 37:560-2 *Je* '15

See also New York Times

**Newspapers**

Advertising service of the weekly. *Inland Ptr* 55:475-7 *Jl* '15

Boosting the advertising patronage in a local paper. C. L. Chamberlin. *Inland Ptr* 55:761-5 *S* '15

Conflict between news and advertising. J. C. Morrison. *Inland Ptr* 54:681-4 *F* '15

Game of killing off your competitor. J. C. Morrison. *Inland Ptr* 54:640-1 *Ja* '15

Increasing newspaper circulation. B. O. Brown. *Inland Ptr* 55:182-4 *My* '15

Newspaper survey. J. C. Morrison. *Inland Ptr* 55:637-8 *Jl* '15

Newspaper work. J. C. Morrison. See monthly numbers of Inland printer

Press and the rate advance case. *Ry Age* 58:776 *Ap* 9 '15

Review of newspapers and advertisements. J. L. Frazier. See monthly numbers of Inland printer

Solicitor wanted for country weeklies; subscription price. J. C. Morrison. *Inland Ptr* 55:241-4 *My* '15

Some subscription suggestions. J. C. Morrison. *Inland Ptr* 55:85-7 *Ap* '15

Unlimited possibilities of the live country newspaper. A. G. Brenton. *Inland Ptr* 54:412 *D* '14

**Why do we lose money on special editions?**

J. C. Morrison. *Inland Ptr* 56:390-1 *D* '15

See also Advertising; Journalism; Publicity; Reporting; Waste paper; also New York times

**Niagara falls**

Intermittent waterfall; using the power of Niagara falls without impairing its scenic beauty. E. Dunn. *Il Sci Am* 113:492-3+ *D* 4 '15

**Nickel**

Canada's nickel trouble. *Eng & Min J* 99:30-1 *Ja* 2 '15

Cobalt and nickel assay. S. Fischer, jr. *Met & Chem Eng* 12:773-4 *D* '14

Nickel, copper and mercury as affected by the war. *J Ind & Eng Chem* 7:71-2 *Ja* '15

Welding up scrap nickel anodes. *Il Elec R & W Elec'n* 66:1210-11 *Je* 26 '15; Same. *Eng & Min J* 100:19 *Jl* 3 '15; Same. *Foundry* 43:283-4 *Jl* '15; Same. *Met & Chem Eng* 13:453-4 *Jl* '15; Same cond. *Iron Age* 95:1342 *Je* 24 '15; Same abr. *Metal Ind n s* 13:297 *Jl* '15

See also Ilium; Nickel chromium; Nickel steel

**Nickel chromium**

Court of appeals decision in nickel-chromium resistor suit. *Met & Chem Eng* 13:414-15 *Jl* '15

**Nickel oxide**

Emissivity of metals and oxides: nickel oxide (Ni O) in the range 600° to 1300° C. G. K. Burgess and P. D. Foote. *diag U S Bur Stand Bul* 11:41-64 *N* 15 '14

**Nickel plating**

Aluminum-nickel. J. Canac and E. Tassilly. *Eng M* 49:273-4 *My* '15

Bar nickel anodes vs. flat. J. A. Hall. *Metal Ind n s* 13:336 *Ag* '15

Determining weight of deposit. L. C. Wilson. *Metal Ind n s* 13:505-6 *D* '14

Development of nickel plating. E. Weston. *J Ind & Eng Chem* 7:249-50 *Mr* '15

Efficiency in the plating room. E. P. Later. *Il Foundry* 43:360-5 *S* '15

Methods used by platers to produce bright nickel deposits. C. H. Proctor. *Metal Ind n s* 13:57 *F* '15

Nickel-plating aluminum. *Elec R & W Elec'n* 66:1056 *Je* 5 '15

Nickel-plating on aluminum. *Sci Am S* 80:197 *S* 25 '15

Plating of the troublesome die-castings. S. Herrick. *Metal Ind n s* 13:373-4 *S* '15

Successful nickel plating of die castings or articles made from sheet zinc. C. H. Proctor. *Metal Ind n s* 13:374 *Jl* '15

**Nickel silver. See German silver****Nickel steel**

Data on nickel steels. G. W. Armstrong. *Eng & Contr* 44:63-4 *Jl* 21 '15

Longest simple truss span in world to be erected over Ohio river at Metropolis. *diag Eng Rec* 72:53-4 *Jl* 10 '15

**Night work**

How to organize your night force. H. C. White. *Iron Tr R* 56:1056-8 *My* 27 '15; Same. *Iron Age* 95:1174-5 *My* 27 '15; Same. *Ind Eng* 15:95-7 *S* '15; *Abstract. Mach* 21:905 *Jl* '15

**Nitrates**

Binary and ternary systems of the nitrates of the alkali and alkaline earth metals. W. D. Harkins and G. L. Clark. *Am Chem Soc J* 37:1816-28 *Ag* '15

Determination of nitrates in soil. R. S. Potter and R. S. Snyder. *J Ind & Eng Chem* 7:863-4 *O* '15

Titration of nitrates with ferrous sulfate. F. C. Bowman and W. W. Scott. *J Ind & Eng Chem* 7:766-9 *S* '15

**Nitric acid**

Action of nitric acid on iodoanil. L. Clarke and E. K. Bolton. *Am Chem Soc J* 36:1893-1908 *S* '14

Boiling-point of aqueous solutions of nitric acid at different pressures. H. J. M. Creighton and J. H. Githens. *diag J Fr Inst* 179:161-9 *F* '15

Germany's nitrate supply. *Sci Am* 112:216 *Mr* 6 '15

- Nitric acid—Continued**  
Strength of nitric acid, period of extraction, and ignition as affecting the gravimetric determination of phosphoric acid in soils. O. L. Brauer. *J Ind & Eng Chem* 6:1004-5 D '14  
Synthetic production of nitric acid. *Sci Am S* 30:208 S 25 '15
- Nitrobenzene**  
Studies of a new kind of e.m.f. R. Beutner. *diags Am Chem Soc J* 36:2040-59 O '14
- Nitrocarboxypyrrolic acid**  
Constitution of the nitro- $\alpha$ -carboxypyrrolic acids. W: J. Hale and W: V. Hoyt. *Am Chem Soc J* 37:2538-52 N '15
- Nitrocellulose**  
Chemical engineering in nitrocellulose manufacture. S. L. Stadelman. *Met & Chem Eng* 13:361-6 Je '15  
Contributions of the chemist to the celluloid and nitrocellulose industry. R. C. Schupp-haus. *J Ind & Eng Chem* 7:890 Ap '15  
Proximate analysis of nitrocellulose solutions and solvents. A. D. Conley. *J Ind & Eng Chem* 7:882-7 O '15
- Nitrogen**  
American nitrogen industry. *Eng N* 73:557 Mr '15  
Availability of organic nitrogen. J. E. Breckenridge. *Il J Ind & Eng Chem* 7:671-3 Ag '15  
Carbonitride furnace. *diag Met & Chem Eng* 13:642 S 15 '15  
Chemical industries of Germany. P. F. Frankland. *Met & Chem Eng* 13:382 Je '15; Same. *Sci Am S* 79:390 Je 19 '15  
Commercial nitrogen fixation; with discussion. S. Peacock. *Met & Chem Eng* 13:325-6 My '15  
Comparison of the Gunning-copper method with the Kjeldahl-Gunning-Arnold method for the determination of nitrogen. O. F. Jensen. *J Ind & Eng Chem* 7:38-9 Ja '15  
Comparison of various modifications of the Kjeldahl method with the Dumas method of determining nitrogen in coal. A. C. Fieldner and C. A. Taylor. *J Ind & Eng Chem* 7:106-12 F '15; Same. *U S Bur Mines Tech Pa* 64: 1-22 '15  
Cyanamid process. F. S. Washburn. *Met & Chem Eng* 13:309-14 My '15  
Cyanamid works at Niagara Falls. *Il plan Eng N* 73:16-21 Ja 7 '15  
Determination of nitric nitrogen in soils. E. R. Allen. *diags J Ind & Eng Chem* 7:521-9 Je '15  
Fixation of atmospheric nitrogen. L. L. Summers. *diags Am Inst E E Pro* 34:337-71 Mr '15; Abstract, with discussion. *Met & Chem Eng* 13:241-3 Ap '15; Discussion. *Am Inst E E Pro* 34:2656-61 N '15  
Fixation of atmospheric nitrogen. *Sci Am S* 79:388 Je 19 '15  
Fixation of atmospheric nitrogen. W. S. Landis. *Il J Ind & Eng Chem* 7:433-8 My '15; Same. *Met & Chem Eng* 13:213-20 Ap '15  
Fixation of atmospheric nitrogen; a patent by S. Peacock. *Met & Chem Eng* 13:261 Ap '15  
Improved method for the determination of nitrogen in steel. L. E. Barton. *J Ind & Eng Chem* 6:1012-18 D '14  
Kjeldahl-Gunning-Arnold method for nitrogen. J. M. Pickel. *J Ind & Eng Chem* 7:367 Ap '15  
New nitrogen fixation furnace. *diags Eng M* 49:104-5 Ap '15  
Occurrence and influence of nitrogen on iron and steel; abstract and discussion. N. Tschischewski. *Iron Age* 96:952-4 O 21 '15; *Engineer* 120:834-5 O 8 '15  
Oxides of nitrogen from air; patent of F. I. du Pont. *Met & Chem Eng* 13:642 S 15 '15  
Plumbosan process for producing oxygen and nitrogen from atmospheric air; abstract. G. Kassner. *Am Soc M E J* 37:115 F '15  
Producing nitrogen compounds; discussed by the New York section of the A. I. E. E. *Elec W* 65:729 Mr 20 '15; *Elec R & W Elec'n* 66: 536 Mr 20 '15  
Recent advances in the chemistry of the cyanogen compounds. J. E. Clannell. *Am Inst Min E Bul* 108:8120-9 O '15; Same. *Met & Chem Eng* 13:756 O 15 '15
- Nitrogen compounds**  
Free energy of nitrogen compounds. G. N. Lewis and E. C. Adams. *Am Chem Soc J* 37:2208-16 O '15
- Nitrogen lamps.** See **Electric lamps, Tungsten**
- Nitro-hydroxycinnamic acid**  
3-nitro-4-hydroxycinnamic acid and its methyl ether. T. B. Johnson and E. T. Kohmann. *Am Chem Soc J* 37:162-7 Ja '15
- Nitroso compounds**  
Nitroso derivatives of semicarbazinodiacetic acid esters. J. R. Bailey and D. F. Snyder. *Am Chem Soc J* 37:942-6 Ap '15
- Nitrosulphonic acids**  
Tolyl esters and toluidides of the nitro-sulfonic acids of *p*-xylene. R. C. Huston. *Am Chem Soc J* 37:3119-22 S '15
- Nitrotyrosine**  
Studies on nitrated proteins: the determination of the structure of nitrotyrosine. T. B. Johnson and E. T. Kohmann. *Am Chem Soc J* 37:1863-84 Ag '15  
Studies on nitrated proteins; the identification of 3-nitrotyrosine among the products of hydrolysis of nitrated fibrin. T. B. Johnson. *Am Chem Soc J* 37:2598-603 N '15
- Noble, Alfred, 1844-1914**  
Past-president, W. S. E.; memoir. *por W Soc E J* 20:568-607 S '15
- Noble, Sir Andrew, 1831-1915**  
Sketch. *por Engineer* 120:406-7 O 29 '15
- Nodulizing**  
Nodulizing in copper metallurgy. J. H. Payne. *Eng & Min J* 99:272-4 F 6 '15
- Noise**  
Reduction or elimination of noise attending the operation of mechanical ventilating machinery. R. W. Fryor. *Ir. plans Heat & Ven* 11:26-9 Ag '14; Same. *Am Soc Heat & V E* 20:320-5 '14; Same. *Iron Age* 94:210-11 Ji 28 '14; Same. *Metal Work* 82:275-6 S 4 '14; Discussion. *Am Soc Heat & V E* 20:325-9 '14; Discussion. *Heat & Ven* 11:44-5 N '14
- Nolachuckey river**  
Design low dam for 30-foot height increase across Nolachuckey river. W. V. N. Powelson. *Il Eng Rec* 71:175-6 F 6 '15
- Nomographs**  
Nomographic charts for Kutter's formula. G. S. Coleman. *Eng Rec* 72:489 O 16 '15  
Nomographic charts for simple beam design. C. D. Conklin, Jr. *Eng Rec* 71:809 Je 26 '15  
Nomographic solutions for formulas of various types. R. C. Strachan. *Eng Rec* 71:807-9 Je 26 '15
- Nonane**  
Normal nonane. L. Clarke and R. Adams. *Am Chem Soc J* 37:2538-8 N '15
- Norfolk, Virginia**  
**Sanitary affairs**  
Garbage collection and incineration at Norfolk, Va. W: R. Russell. *Il diags Munic J* 38:183-5 F 11 '15
- Norfolk & Western railroad**  
Automatic signals on Norfolk & Western electrified line. *Il Ry Age* 59:21-2 Ji 2 '15  
Building low-grade line for Norfolk & Western R. R. *Il map Eng N* 74:818-21 O 28 '15  
Electric traction on the Norfolk & Western railway. *Il diag plans Eng N* 73:1192-5, 1238-43 Je 17-24 '15  
Electrification. *Il Power* 41:830-5 Je 22 '15  
Electrification. *Il plans map Elec Ry J* 45: 1058-89 Je 5 '15  
Electrification of the Elkhorn grade. *Il plans Ry R* 56:756-61, 791-7; 57:101-7, 150-2 Je 5-12, Ji 24-31 '15  
Electrification of the Elkhorn grade. *Il Sci Am S* 79:372-4 Je 12 '15  
Elkhorn grade electrification. *Il diags map Ry Age* 58:1153-63 Je 4 '15  
Financial condition. *map Ry Age* 59:491-2 S 17 '15  
New field for railway electrification has been developed by the Norfolk & Western. *Il Eng Rec* 71:704-6 Je 5 '15
- Norfolk & Western and Pennsylvania electrifications.** G: Gibbs. *W Soc E J* 20:308-14 Ap '15
- Northern Pacific railway**  
Annual report for the fiscal year ended June 30, 1914. *map Ry Age* 58:611-13, 650-4 Mr 19 '15

**Northern Pacific railway—Continued**

Northern Pacific Ry. near Tacoma—new coast line. *Il* diag map. Eng N 73:562-5 Mr 25 '15  
 Point Defiance line eliminates last heavy grade between Tacoma and Portland. D. L. Soltan. map Eng Rec 71:744-5 Je 12 '15

**Northern white cedar association**

19th annual convention, Minneapolis, Jan. 26. Elec R & W Elec'n 66:264-6 F 6 '15  
 19th convention, Minneapolis, Minn., Jan. 26 and 27, 1915. Elec W 66:369 F 6 '15

**Northwest**

Industrial resources and opportunities of the Northwest. H. K. Benson. Met & Chem Eng 13:589-92 S 15 '15; Same. J Ind & Eng Chem 7:981-4 N '15

**Northwest electric light and power association**

8th annual convention, Portland, Ore., Sept. 8-11. Elec R & W Elec'n 67:528-34 S 18 '15  
 8th annual convention, Portland, Ore., Sept. 8-11. Elec W 66:567-9, 624-6 S 11-13 '15

**Norwalk, Connecticut****Water supply**

Seven years' successful operation of double sand filtration plant at South Norwalk, Conn., in removal of objectional tastes and odors. H. W. Clark. Eng & Contr 44:262-3 O 6 '15

**Norway****Industries and resources**

Grong copper and pyrites mines of Norway. A. D. Udhany. *Il* map Eng & Min J 99:889-92 My 22 '15

*See also* Water power—Norway

Notes. *See* Bills and notes

**Nottingham, England**

To make Nottingham a port. Sci Am S 79:342 My 29 '15

**Sewerage**

How the city of Nottingham solved its sewage disposal problem. C. M. Hitch. Dom Eng 72:377-8 S 26 '15; Same. Metal Work 84:399 S 24 '15

Sewage disposal at a profit in Nottingham. Sci Am 113:442 N 30 '15

Noyes, Arthur Amos, 1866-

Gibbs medal award. W. D. Harkins; J. Stieglitz. por J Ind & Eng Chem 7:449-50 My '15

**Nozzles**

Binks spray nozzle. diag Power 42:380 S 14 '15

Calculation of the Laval nozzle by the PV diagram; abstract. A. Balog. Am Soc M E J 37:481-2 Ag '15

Exhaust nozzle with internal projections. diag Ry Age 58:799 Ap 9 '15; Same. Ry Age (Mech ed) 89:198-9 Ap '15

Method of adjusting sewage sprinklers. A. T. Nabstedt. diag Eng N 74:219-20 Jl 29 '15

Present status of the variable exhaust. J. S. Bell. *Il* diag Ry R 56:797-9 Je 13 '15

Thomas spray head. *Il* Power 42:644-5 N 9 '15  
 Universal sewage spraying nozzle. diag Eng & Contr 44:96 Ag 4 '15

Variable blast nozzle on American locomotives. diag Engineer 120:232 S 3 '15

Will Quiz asks about the shape of steam nozzles. Power 41:56 Ja 12 '15

*See also* Carbureters

**Nuisances**

Power plants as nuisances. A. L. H. Street. Power 42:486-7 S 28 '15

**Numbers**

Curious property of numbers. J. Bowden. Sci Am S 79:371 Je 12 '15

*See also* Numerals

**Numerals**

How we got our alphabet: the numerals. W. Rice. Inland Ptr 55:389-90 Je '15

*See also* Numbers

**Nurses and nursing**

*See also* First aid in illness and injury

**Nutrition**

New era in the science of nutrition; experiments of T. B. Osborne and L. B. Mendel. R. L. Kahn. Sci Am S 79:182-3 Mr 20 '15

Salt and its relation to nutrition. P. G. Stiles. Sci Am S 79:295 My 8 '15

*See also* Food; Metabolism

Nuts (machinery). *See* Bolts and nuts

**Nystagmus**

Nystagmus (trembling of the eyes) of the miners. Colliery 85:505 Ap '15

**O****Oakland, California****Streets**

City of Oakland, California, and its street work. W. H. Jordan. *Il* Good Roads n s 10:127-32 S 4 '15

Observatories, Astronomical. *See* Astronomical observatories

Occupational diseases. *See* Diseases, Industrial Occupations

Film may help in the selection of an occupation. Sci Am S 80:333 N 20 '15

Recognizing vocations from the teeth. *Il* Sci Am S 79:300 My 8 '15

Selecting the right occupation. Eng N 74:221-2 Ag 12 '15

*See also* Business

**Diseases and hygiene**

*See* Diseases, Industrial; Foundry sanitation; Lead poisoning; Zinc poisoning

**Ocean**

Formation of primitive oceans. Sci Am S 80:211 O 2 '15

Seeing under water. *Il* diag Sci Am S 80:97, 101 Ag 14 '15

*See also* Commerce; Dredging machinery; Gulf stream; Icebergs; Sea walls; Sea water; Ships; Sounding; Waves

**Ocymum plossum Roxb**

Oil of ocymum plossum Roxb. K. Bhaduri. Am Chem Soc J 36:1772-3 Ag '14

**Odessa**

Odessa, the grain port of Russia. Sci Am S 79:3 Ja 2 '15

**Odors**

Investigations on the nature and elimination of odors and dust from a garbage reduction plant. H. W. Mahr and A. C. Kraft. *Il* diag J Ind & Eng Chem 7:778-85 S '15

Loss of weight of musk in a current of dry air. C. B. Bazzoni. diag J Fr Inst 180:463-9 O '15

Prevention of odors at city refuse disposal works. R. Hering. Eng & Contr 43:81-2 Ja 27 '15

*See also* Perfumery

**Office buildings**

Circle building, New York. *Il* plan Arch & Bldg 47:282-3 Ag '15

Commonwealth Edison company formally opens new headquarters in Edison building, Chicago. *Il* Elec W 66:682-3 S 25 '15

Formal opening of Commonwealth Edison company's new office building, Chicago. *Il* Elec R & W Elec'n 67:684-5 S 25 '15

Gas burners in 2750-hp. office-building boiler plant. *Il* diag Power 42:79-80 Jl 20 '15

Heating and ventilating an office building by electricity: Hydraulic power co.'s plant at Niagara Falls. C. F. Herington. *Il* diag plan Heat & Ven 12:13-22 Je '15

Heating and ventilating conditions in large office building. C. E. A. Winslow and G. F. Maglott. Heat & Ven 12:26-31 F '15

Heating and ventilation of offices and banking rooms. C. L. Hubbard. diag Brickb 23:307-10 D '14

L. C. Smith building, Seattle, Wash. *Il* plan Arch & Bldg 46:471-5 D '14

Land and loan office for H. C. Adams, Algona, Ia.; plan. Arch & Bldg 47:388. F '15

New Commonwealth Edison building. *Il* Elec R & W Elec'n 66:1035-7 Je 5 '15

New Delaware and Hudson office building at Albany, N. Y. M. T. Reynolds. *Il* Concrete Cem 6:289-93 Je '15



**Office buildings—Continued**

- Office-building service data. W. R. Metz. Power 42:126-6 JI 27 '15
- Plumbing system of modern office building. II plan Metal Work 84:279-80 Ag 27 '15
- Power plant of the new Equitable building, New York. II Elec W 66:81-5 JI 10 '15
- Small office building remodeled from a group of old brick houses. II plans Brickb 24:73-4 Mr '15
- Structural features of Northwestern-mutual life insurance building, Milwaukee. diag Eng Rec 71:206-7 F 13 '15
- Types of elevator lobbies in office buildings. C. F. Baker. II plans Arch Rec 38:681-40 D '15
- Vanderbilt concourse offices. II plans Arch & Bldg 47:148-52 Ap '15
- Widener building, Philadelphia, Pa. II plans Arch & Bldg 47:349-54 O '15
- Wind stresses in the steel frames of office buildings. A. Smith. tables pls W Soc E J 20:841-64 Ap '15
- Wind stresses in the steel frames of office buildings. W. M. Wilson and G. A. Maney. tables III U Eng Exp Sta Bul 80:1-88 '15; Abstract. Eng Rec 73:231-2 Ag 21 '15
- Wind stresses in the steel frames of office buildings; with discussion. W. M. Wilson. tables pls W Soc E J 20:365-90 Ap '15
- Work of the Chicago ventilation commission. II plans Heat & Ven 12:26-31 My '15
- See also High buildings; Printing offices; also Equitable building, New York; Woolworth building, New York
- Lighting**
- Illumination systems for good lighting of offices. A. B. Oday and R. E. Harrington. II Elec W 65:314 Mr 27 '15
- Office management**
- Efficiency in conduct of office business; new methods in a naval bureau. Ry R 57:472-4 O 9 '15
- Handling correspondence at the United States department of state. W. Fawcett. II Inland Ptr 56:109-12 O '15
- Minor points that are sometimes neglected. C. N. Stannard. Am Gas Light J 103:282-3 N 1 '15
- Office helps for the master plumber. J. F. Scott. Dom Eng 71:66-7; 72:7-8 Ap 17, JI 8 '15
- Office management. J. P. Brophy. Mach 22: 209 N '15
- Office methods for the electrical contractor. Elec R & W Elec'n 66:550-2 Mr 20 '15
- Office system and forms for the electrical contractor. C. M. Converse. Elec R & W Elec'n 67:150-2 JI 24 '15
- Scientific management in the office. R. T. Kent. Iron Age 95:82-6, 142-4 Ja 7-14 '15
- Ogontz Hill, Philadelphia**
- Stucco in suburban architecture—notes on Ogontz Hill, Philadelphia. O. C. Hering. II Concrete Cem 6:9-14 Ja '15
- Ohio electric light association**
- Convention at Cedar Point; relations with the public, experience with gas-filled lamps, and high-tension insulators among topics discussed. Elec W 66:219-20 JI 24 '15
- Meeting of the committee on new business co-operation. Elec R & W Elec'n 67:555-6 S 25 '15
- Meeting of the committee on new-business co-operations. Elec W 66:662 S 18 '15
- Ohio central-station men meet in Cleveland. Elec R & W Elec'n 66:192-3 Ja 30 '15
- 21st annual meeting, Cedar Point, July 20-23. Elec R & W Elec'n 67:196-200 JI 31 '15
- Ohio master plumbers' association**
- Annual convention; discussion of federal indictment of officers and members. Metal Work 83:302-4 F 19 '15
- 24th annual convention, Akron, O., Feb. 9-11. Dom Eng 70:212-15 F 13 '15
- Ohio master sheet metal contractors' association**
- 1st annual convention, Dayton, June 2-3. Metal Work 83:858-61 Je 11 '15
- Ohio sheet metal contractors organize. Metal Work 83:235-6 F 5 '15

**Ohio river**

- Port improvements along the Mississippi and Ohio rivers. Eng N 73:1066-8 Je 8 '15
- Ohio state association of builders' exchanges**
- 9th annual convention, Columbus, O. Bldg. Age 37:47-8 Mr '15
- Ohmmeter**
- Ohmmeter with several scales; abstract. H. A. W. Klinehamer. diag Elec W 65:37 Ja 2 '15
- Oil analysis**
- Iodine number of linseed and petroleum oils. W. H. Smith and J. B. Tuttle. U S Bur Stand Tech Pa 37:1-17 '14; Same. J Ind & Eng Chem 6:994-8 D '14
- Quantitative method for the determination of the adulteration in Chinese wood oil. J. C. Brier. J Ind & Eng Chem 7:953-7 N '15
- Oil as fuel.** See Petroleum as fuel
- Oil burners**
- Champion oil burner. diag Power 41:7 Ja 5 '15
- Detail of open hearth oil burner. R. A. Bull. diag Iron Tr R 57:626 S 30 '15
- Fuel oil for locomotives. G. M. Bean. diag Ry R 56:752-6 Je 5 '15; Same cond. Power 41: 900-1 Je 29 '15; Same cond. Ry Age (Mech ed) 89:280-1 Je '15; Same cond. Ry Age 58: 1115-16 My 28 '15; Same cond. Sci Am 113: 92 JI 31 '15
- Low-pressure oil burners at Steptoe. diag Eng & Min J 99:615 Ap 3 '15
- Low-pressure oil-burning metallurgical furnaces. II Met & Chem Eng 13:510-11 Ag '15
- Petroleum as fuel under boilers and in furnaces for heating, melting, and heat treatment of metals. W. N. Best. II diag Am Inst Min E Bul 104:1527-37 Ag '15; Discussion. 108:2420-2 D '15
- Pressure oil burners. H. A. Everett. II Int Marine Eng 20:314-15 JI '15
- Rotary crude-oil burner. diag Power 41:815 Je 15 '15
- See also Acetylene burners
- Oil circuit breakers.** See Electric circuit breakers
- Oil coolers**
- S. & K. oil cooler. diag Power 41:564-5 Ap 27 '15
- Oil economizer**
- Emulsifying cylinder oil with steam. diag Power 42:746-6 N 30 '15
- Oil engines.** See Gas and oil engines
- Oil filters**
- Combination oil filter and oil refiner. II Elec W 66:264 JI 31 '15
- Cream separator used as an oil filter. A. J. Humphrey. II Mach 21:319 D '14
- New oil filter by Richardson-Phoenix co. II Iron Tr R 56:1170 Je 10 '15
- Oil filter and drier designed by the British Thomson-Houston company, of Rugby. Sci Am S 79:66 Ja 30 '15
- Peterson power-plant oil filter. diag Iron Age 95:838-9 Ap 15 '15; Am Gas Light J 102:284-5 My 2 '15; Power 41:606-7 My 4 '15; Ry Age (Mech ed) 89:253-4 My '15; Ind Eng 15:75-7 Ag '15; Sci Am S 80:245 O 16 '15
- Oil flow**
- Flow of oil fuel in pipes. Am Soc M E J 37:48 Ja '15
- Oil gas.** See Gas, Oil
- Oil handling**
- Storage and handling of gasoline in the garage. H. T. Wade. II Sci Am 112:12-13 Ja 2 '15
- Oil insulation.** See Insulation
- Oil lands**
- United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94: pt 2, 1043-52 '15
- Oil painting.** See Painting
- Oil pipe lines.** See Petroleum pipe lines
- Oil piping**
- Method of lifting oil for a gravity-feed system by use of condenser vacuum. A. Kuylenstierna. diag Elec W 66:1149 N 20 '15
- Tank ship construction. R. W. Morrell. Int Marine Eng 20:71-8 F '15
- Oil properties.** See Petroleum industry

- Oil purification**  
Reubold electrolytic condensate purifier. diag Power 42:561 O 19 '15
- Oil reclaimers**  
De La Vergne oil reclaimers. 11 diag Power 42: 336-7 S 7 '15; Iron Age 96:1103-4 N 4 '15
- Oil separators**  
"Make it easy" specialties. 11 Power 42:649 N 9 '15  
Oil separation from water of condensation; abstract. M. Vahle. diags Am Soc M E J 37: 345-6 Je '15  
Oil separator failed to work. R. N. Robertson; R. McLaren. Power 41:452 Mr 30 '15  
Reasons for an oil separator failing to work. T. W. Reynolds. diag Elec W 66:416 Ag 21 '15  
Removing oil from feed water; the deolizer. 11 Am Gas Light J 103:237 O 11 '15  
Why is an oil separator? R. H. Johnston. diags Horseless Age 36:297-8 S 15 '15
- Oil shales**  
Bituminous shales of Colorado. G. R. DeBeque. 11 Eng & Min J 99:773-4 My 1 '15
- Oil ships.** See Tank ships
- Oil storage**  
Concrete-lined oil storage reservoirs in California; construction methods and cost data; abstract. E. D. Cole. diag Eng & Contr 44: 408-9 N 24 '15  
Fuel oil stations for extreme climatic conditions. plan Ry Age 58:475-6 Mr 12 '15  
Oil-proof reservoirs of concrete. W. M. Kinney. Concrete Cem 6:251-2 My '15  
Rebuilding a burned oil tank. C. P. Bowie. 11 Eng N 74:916-7 N 18 '15  
Storage and handling of gasoline. Sci Am 112: 356 Ap 17 '15  
Storage and handling of gasoline in the garage. H. T. Wade. 11 Sci Am 112:12-13 Ja 2 '15
- Oil switches.** See Electric switches
- Oil tanks.** See Oil storage
- Oil testing**  
Analysis and valuation of motor fuels—14 methods for examining them; from German data. Automobile 33:205, 247-9 J 29-Ag 6 '15  
Automobile lubrication. C. W. Stratford. 11 Sci Am S 79:392-3, 412-14 Je 19-26 '15; Same. Horseless Age 35:879-81; 36:16-19 Je 30-J 7 '15  
Comparative exposure test of vehicles for paint. C. M. Chapman. Eng N 73:70-1 Ja 14 '15  
Design of an absolute viscometer for engineering testing of oils. G. B. Upton. Sibley J 79:262-9 My '15  
Device tests adhesiveness of California road oils. 11 Eng Rec 71:329 Mr 13 '15  
Lubricating oil for Diesel engines and air compressors. H. Moore. Engineer 120:176 Ag 20 '15  
Lubricating oil tests. R. C. Merchant. Colliery 35:618-4 Je '15  
Physical qualities of castor oil. P. G. McVetty. Automobile 33:500-1 S 16 '15  
Report on switch and transformer oils. W. P. Digby. Inst E E J 53:146-56 Ja 1 '15; Abstract. Elec W 65:346-4 F 6 '15  
Road oil test for loss on heating needs revision. N. Chivvis. diags Eng Rec 72:570-1 N 6 '15  
Testing lubricating oils. A. H. Gill. Power 41: 522-3 Ap 13 '15  
Testing oils for flotation process; abstracts. J. Coutts. Met & Chem Eng 13:289-90 Je '15; Eng & Min J 89:1079-80 Je 19 '15  
Theory of lubrication. L. Ubbelohde. Gen Elec R 18:1078-81 N '15  
Value of clean bottles for sampling transformer oil. Elec W 66:589 S 11 '15  
Von Kapff's oil testing machine; abstract. Am Soc M E J 37:412-13 J 1 '15
- Oil transportation.** See Tank cars; Tank ships
- Oil wells.** See Petroleum
- Oils, Essential.** See Essential oils
- Oils and fats**  
British India. U S Sp Cons Rep 72:376-92 '15  
Chemical and physical properties of oils distilled from the various parts of the plant *acorus calamus*. L. G. A. Russell. Am Chem Soc J 37:2337-94 O '15  
Composition of the seeds of *martyria Louisiana*. E. H. S. Bailey and W. S. Long. J Ind & Eng Chem 7:867-8 O '15  
Cooking fats in South America. U S Sp Cons Rep 67:1-15 '15  
Determination of unsaponifiable matter applicable to ether extracts, fats, oils and waxes. J. B. Rather. J Ind & Eng Chem 7:34-5 Ja '15  
Effect of free fatty acids upon the flash and fire points of animal fats and oils. A. Lowenstein and J. J. Vollertsen. J Ind & Eng Chem 7:350 O '15  
Eucalyptus oil industry of California. P. W. Tompkins. J Ind & Eng Chem 7:995-7 N '15  
Hydrogenation of oils and soft fats. Sci Am S 80:99 Ag 14 '15  
Investigations on the oil of eucalyptus globulus of California. C. E. Burke and C. C. Scallone. 11 J Ind & Eng Chem 7:206-9 Mr '15  
Kambara earth and its bleaching action on oils. S. Ueno. diags J Ind & Eng Chem 7: 596-600 J 1 '15  
Modern substitutes for butter. Sci Am S 80:27 J 10 '15  
Oils of the coniferae. IV—The leaf and twig oils of digger pine, lodgepole pine, and red fir. A. W. Schorger. J Ind & Eng Chem 7:24-6 Ja '15  
Paint vehicles as protective agents against corrosion; with discussion. M. Toch. 11 J Ind & Eng Chem 7:510-14 Je '15  
Physical constants of gas oils and derived tars. W. F. Rittman and G. Egloff. J Ind & Eng Chem 7:481-4 Je '15  
Rate of evaporation of ether from oils and its application in oil-ether colonic anesthesia. C. Baskerville. J Ind & Eng Chem 7: 363-70 O '15  
Specific gravity—its determination for tars, oils and pitches. J. M. Weiss. 11 J Ind & Eng Chem 7:21-4 Ja '15  
Unsaponifiable matter in greases. E. Twitchell. J Ind & Eng Chem 7:21-18 Mr '15  
See also Butter fat; Cottonseed oil; Creosote; Essential oils; Lined oil; Lubrication and lubricants; Oil analysis; Petroleum
- Okeechobee, Lake**  
Lake Okeechobee water level. F. C. Elliot. Eng N 74:612-13 S 23 '15
- Oklahoma**  
Industries and resources  
Influence of the Cushing pool in the oil industry. R. H. Johnson and L. G. Huntley. Eng Soc W Pa 31:460-72; Discussion. 31:472-87 J 1 '15  
See also Mines and mineral resources—Oklahoma  
Oklahoma gas, electric & street railway association  
4th annual convention, Oklahoma City, May 12-13. Elec Ry J 45:983-5 My 22 '15  
4th annual convention, Oklahoma City, May 12-13. Elec W 66:1340 My 22 '15
- Oleoresin**  
Oleoresin of sand pine. A. W. Schorger. J Ind & Eng Chem 7:321-2 Ap '15
- Omaha, Nebraska**  
Water supply  
Rebuilding the Omaha water-intake cribs. G. T. Prince. 11 diags Eng N 74:842-4 Ag 13 '15
- Omens**  
Omens of war. Sci Am 113:3 J 18 '15
- Om nibuses, Electric.** See Electric buses
- Om nibuses, Motor.** See Motor buses
- Om nibuses, Steam.** See Motor buses, Steam
- Onnes, Heike Kamerlingh, 1853-**  
Award of the Franklin medal. J Fr Inst 180: 107-11 J 1 '15  
Dutch specialist in cold. por Sci Am 112:151-4 F 13 '15
- Ontario**  
See also Mines and mineral resources—Ontario  
Ontario municipal railway  
1500-volt direct-current electrification of the Ontario municipal railway. G. H. Hill. Gen Elec R 18:10-11 Ja '15

## Opelousas, Louisiana

## Lighting

Opelousas' municipal lighting plant. A. C. Jones. *Il Power* 41:41-2 Ja 12 '15

## Open and closed shops

Closed shop clauses in building contracts. W. Drew. *Am Ind* 15:11-12 Mr '15  
Detroit's great growth due to its open shop policy. L. W. Moffett. *Iron Tr R* 57:143-7 JI 15 '15

Federal industrial relations commission report. W. Drew. *Am Ind* 15:15-17 Ja '15

## Open hearth process

Air and steam as atomizing agents. R. A. Bull. *diags Iron Tr R* 57:626-9 S 30 '15; Same (Tests in atomizing fuel oil with steam and air). *Foundry* 43:424-7 O '15; Excerpts. *Iron Age* 96:1049-50 N 4 '15

Areagrams of open-hearth furnace flues. A. R. Mitchell. *Iron Age* 95:607-8 Mr 13 '15

Checker design for open hearths. W. A. Janssen. *Iron Tr R* 57:624-5 S 30 '15; Same. *Foundry* 43:418-15 O '15

New end construction for open-hearth furnaces. *diag Iron Age* 96:244 JI 29 '15

Open hearth versus the electric furnace in the manufacture of commercial steels. S. Cornell. *Met & Chem Eng* 13:630-1 S 15 '15

Waste-heat boilers in steel plants; abstracts. C. J. Bacon. *diags Iron Age* 95:1849-52 Je 17 '15; *Iron Tr R* 56:1123-4 Je 3 '15; *Power* 42:27-8 JI 6 '15

## Open shop. See Open and closed shop

## Opium

Early history of opium. *Sci Am S* 80:20 JI 10 '15

History of opium. D. I. Macht. *Sci Am S* 79:350-2 My 29 '15

See also Papaverine

## Optical illusions

Seeing under water. *Il diags Sci Am S* 80:97-4 Ag 14 '15

## Optical instruments

See also Kaleidoscope; Lenses; Periscope; Stereoscopic telemeter; Telescopes

## Optical rotation

Comparison of the optical rotatory powers of the alpha and beta forms of certain acetylated derivatives of glucose. C. S. Hudson and J. K. Dale. *Am Chem Soc J* 37:1264-70 My '15

Optical rotatory power and chemical constitution. L. G. Wesson. *Am Chem Soc J* 36:2522-32 D '14

## Optics

Visibility. C. C. Paterson and B. P. Dudding. *Illum Engr* 8:210-16; Discussion. 8:216-26 My '15

See also Light

## Optics, Physical

Absorption, reflection, and dispersion constants of quartz. W. W. Coblentz. *U S Bur Stand Bul* 11:471-81 My 10 '15

Optical properties of diffusing media. *Illum Eng Soc* 10:353-402 no 5 '15

## Optophone

Mechanical eye bringing sight to the blind; a description of the crystal phonopticon. L. E. Dodd. *Il Sci Am* 113:138-49 Ag 14 '15

Optophone and musical pitch. E. H. Hawley. *Sci Am* 111:523 D 26 '14

Phonoptikon and the optophone. E. E. Fournier d'Albe. *Sci Am* 113:467 N 27 '15

Type-reading optophone. E. E. Fournier d'Albe. *diag Sci Am S* 78:371 D 12 '14

## Orcinoliphtaleins

Orcinoliphtaleins, the orcinoliphtetrachlorophthalins, and some of their derivatives. W. R. Orndorff and E. R. Allen. *Am Chem Soc J* 37:1301-58 My '15

## Ore bins

Steel vs. timber ore bins. P. H. Barbour. *diags Eng & Min J* 99:195-6 Ja 23 '15

## Ore chute. See Mine timbering

## Ore cleaning. See Ore treatment

## Ore deposits

Ancient sedimentary iron ores of British India. C. M. Weld. *maps Econ Geol* 10:435-52 JI '15

Certain mineral occurrences in the Worthington mine, Sudbury, Ontario, and their significance. T. L. Walker. *Il map Econ Geol* 10:536-42 S '15

Copper deposits in the Red Beds of southwestern Oklahoma. A. E. Fath. *Il Econ Geol* 10:140-50 F '15

Copper deposits of San Cristobal, Santo Domingo. J. F. Donnelly. *bibliog Il Am Inst Min E Bul* 104:1759-68 Ag '15; Discussion. 108:2473-4 D '15

Disseminated copper ores of Bingham Canyon, Utah. J. J. Beeson. *Il diags Am Inst Min E Bul* 107:2191-238 N '15

Economic geology. A. Knopf. *Eng & Min J* 99:102-4 Ja 9 '15

Experiments in the enrichment of silver ores. L. G. Ravicz. *Econ Geol* 10:368-89 Je '15

Formation and distribution of bog iron-ore deposits. C. L. Duke. *Am Inst Min E Bul* 103:1429-36 JI '15; *Eng & Min J* 100:74-5 JI 10 '15; Excerpts. *Iron Tr R* 57:488 S 9 '15; Discussion. *Am Inst Min E Bul* 108:2475-6 D '15

Formation of the oxidized ores of zinc from the sulphide. Y. T. Wang. *Il Am Inst Min E Bul* 105:1959-2012 S '15

Geological anatomy of a Tennessee zinc mine. F. L. Nason. *diags Eng & Min J* 100:259-62 Ag 14 '15

Geology and ore deposits of Red Cliff, Colorado. A. H. Means. *Il Econ Geol* 10:1-27 Ja '15

Geology of Juneau district. F. B. Hyder. *Eng & Min J* 99:901-2 My 22 '15

Geology of the iron-ore deposits in and near Daiquiri, Cuba. J. F. Kemp. *Il diags map Am Inst Min E Bul* 105:1801-36 S '15; Discussion. 108:2472 D '15

Geology of the ore deposits of the Tintic mining district. G. W. Crane. *Am Inst Min E Bul* 106:2147-60 O '15; Same cond. *Eng & Min J* 100:753-7 N 6 '15

Goldfield and its present boom. H. C. Cutler. *Il Eng & Min J* 99:221-4 Ja 30 '15

Iron deposits of Daiquiri, Cuba. W. Lindgren and C. P. Ross. *bibliog Il Am Inst Min E Bul* 106:2171-90 O '15

Is the Boulder batholith a laccolith? discussion of paper by A. C. Lawson. A. Knopf. *Econ Geol* 9:396-402 Je '14

Main mineral zone of the Santa Eulalia district, Chihuahua. B. Prescott. *diag map Am Inst Min E Bul* 98:155-98 F '15

Mayari iron-ore deposits, Cuba. J. F. Kemp. *Il diags Am Inst Min E Bul* 98:129-54; 103:1461-2 F, JI '15

Observations on contact metamorphic ore deposits. B. Prescott. *diags Econ Geol* 10:55-89 Ja '15

Ore bodies of the Mesabi range. J. F. Wolff. *Il map Eng & Min J* 100:89-94, 135-9, 178-85, 219-24 JI 17-Ag 7 '15

Ores of Gilpin county, Colorado. E. S. Bastin. *Il Econ Geol* 10:263-91 Ap '15

Origin of certain ore-deposits. J. E. Spurr. *Econ Geol* 10:101-22 F '15

Origin of certain ore-deposits. L. V. Pirsson. *Econ Geol* 10:180-6 F '15

Oriskany iron ores of Virginia. C. M. Weld. *maps Econ Geol* 10:399-421 JI '15

Pocket deposits of the Klamath mountains, California. H. G. Ferguson. *Il maps Econ Geol* 10:241-61 Ap '15

Problems in iron ore geology in Sweden and in America. F. Geijer. *Il Econ Geol* 10:299-329 Je '15

Processes of mineralization and enrichment in the Tintic mining district. W. Lindgren. 2 pls *Econ Geol* 10:225-40 Ap '15

Quartz veins in lamprophyre intrusions. J. F. McLennan. *Eng & Min J* 99:11-13 Ja 2 '15

Rate of reduction of acidity of descending waters by certain ore and gangue minerals and its bearing upon secondary sulphide enrichment. G. S. Nishihara. *Il Econ Geol* 9:743-57 D '14

Relation of ore deposits to different types of intrusive bodies in Utah. B. S. Butler. *map Econ Geol* 10:101-22 F '15

**Ore deposits—Continued**

- Structure of the Cuyuna iron-ore district of Minnesota. C. A. Cheney, jr. map Eng & Min J 99:1113-15 Je 26 '15  
 Temperatures that obtain in zones of chalcocitization. W. H. Emmons. Econ Geol 10:151-60 F '15  
 Zinc deposits of eastern Tennessee. F. L. Nason. Eng & Min J 99:734-6 Ap 24 '15  
*See also* Boulder batholith; Copper ores; Geology; Iron ores; Jamesonite; Mines and mineral resources

**Ore dressing. See Ore treatment****Ore handling**

- Application of electricity to the ore handling industry. C. D. Gilpin. diags Am Inst E E Pro 34:397-415 Mr '15; Abstract. Elec W 65: 996-7 Ap 17 '15; Discussion. Am Inst E E Pro 34:3063-7 D '15  
 Design, construction, operation and cost of a 2,594-ft. steel stocking trestle at the Negaunee mine, Negaunee, Mich. S. R. Elliott. II Eng & Contr 44:171-3 S 1 '15  
 Direct-current motors for coal and ore bridges. R. H. McLain. II Am Inst E E Pro 33:1009-20 Je '14; Discussion. 33:1887-8 D '14  
 Hamill belt-driven ore feeder. II Eng & Min J 100:805 N 13 '15  
 Influence of discharging appliances on the design of large ore carriers. J. Reid. diag Engineer 119:300-1 Mr 26 '15  
 New ore unloading plant at Huron. II Int Marine Eng 20:65-6 F '15  
 Ore unloaders at Philadelphia. II Iron Tr R 56:1008-10 My 20 '15  
 Permanent stockpile trestle of wood. O. Gustafson. II diags Eng & Min J 98:1003-4 D 5 '14  
 Simple holder for ore sacks. diag Eng & Min J 100:840 N 20 '15

**Ore pulp**

- Barth slide rule for pulp measurement. C. G. Barth, Jr. II Eng & Min J 100:228 Ag 7 '15  
 Filtration of slimes. L. D. Mills. Met & Chem Eng 13:724 O 15 '15  
 New diaphragm pump. II Met & Chem Eng 13: 455-6 Jl '15  
 Note on the settling of slimes. A. J. Clark. Eng & Min J 99:412 F 27 '15  
 Pulp constants, with tables to facilitate tonnage calculations for pulps of all usual solution and dry slimes specific gravities. G. H. Clevenger, H. W. Young and T. N. Turner. Eng & Min J 98:1079-84 D 19 '14

**Ore sampling**

- Bardill sampling machine. J. O. Bardill. II diag Eng & Min J 100:303-4 N 13 '15  
 Large-scale sampling. S. J. Jennings. Eng & Min J 98:1138 D 26 '14  
 Mechanical ore sampler. J. H. Taylor. diags Eng & Min J 100:239 Ag 7 '15  
 New method of making sieve tests. R. H. Bassett. Iron Tr R 57:230-4 Jl 29 '15  
 New sampling plant at Hamburg. II diags Eng & Min J 100:140-1 Jl 24 '15  
 Sample catcher for backs. A. L. Oke. II Eng & Min J 98:1096-7 D 19 '14  
 Sampling of churn-drill prospect holes. F. G. Moses. diags Eng & Min J 100:301-4 Ag 21 '15

**Ore transportation**

- For a 40-cent iron-ore rate. Iron Age 95:194 Ja 21 '15  
 Influence of discharging appliances on the design of large ore carriers. J. Reid. diag Engineer 119:300-1 Mr 26 '15  
 Shipping ore by parcel post. Eng & Min J 100:348 Ag 28 '15

*See also* Motor trucks in ore haulage

**Ore treatment**

- Broken Hill milling practice. Eng & Min J 100:151-3 Jl 24 '15  
 Chilean nitrate industry. M. R. Lamb. II Eng & Min J 99:311-15 My 8 '15  
 Chloridizing blast roasting and leaching. G. A. Kepp. II diag Eng & Min J 99:265-9, 315-22 F 6-13 '15  
 Chloridizing ores at Silver City, Utah. II diag Met & Chem Eng 12:757-9 D '14  
 Cleaning carbonate ores at Highland, Wis. W. F. Boericke. plan Eng & Min J 99:906-7 My 22 '15

- Combined cyanide and other processes. H. A. Megraw. Eng & Min J 98:1007-9, 1127-9 D 5, 26 '14

- Concentrating plant of the Moose Mountain. Ltd. E. B. Hood. II diag Eng & Min J 99: 973-6 Je 6 '15

- Concentration by crushing and screening at the Vindicator consolidated mill. II Met & Chem Eng 13:142-3 Mr '15

- Concentration by the Goltra process: beneficiation of brown iron ores by means of a current of hot air and properly located screens. W. B. Phillips. Iron Age 94:1148-50 N 12 '14; Abstract. Eng M 48:582-5 Ja '15

- Concentrator of the Timber Butte milling co., Butte, Mont. T. Simons. diags map Am Inst Min E Bul 102:1295-1816 Je '15; Abstract. Met & Chem Eng 13:447-9 Jl '15

- Development of ore concentration. H. A. Marvin. II Eng M 49:218-30 My '15

- Electricity in an ore-treating plant. II Elec R & W Elec N 66:481-4 Mr 13 '15

- Experiments on the flow of sand and water through spigots. R. H. Richards and B. Dudley, jr. diags Am Inst Min E-Bul 97:67-72 Ja '15; Same cond. Met & Chem Eng 13:130 F '15

- Handling concentrates at the South Utah plant. T. H. Tulloch. diags Eng & Min J 99: 693-9 Ap 17 '15

- Improvements at the reduction works of the Anaconda company. F. Laist. Eng & Min J 99:418-19 F 27 '15

- Is there a complex-ore problem? W. Motherwell. Met & Chem Eng 13:3-9 Ja '15

- Magnetic-concentration mill at Mt. Hope, N. J. S. Shapira. II diags Eng & Min J 99:559-65 Mr 27 '15

- Mears-Wilfey tailings mill. W. C. Prosser. II Eng & Min J 99:607-8 Ap 3 '15

- Metallurgical practice in the Porcupine district. N. Cunningham. Am Inst Min E Bul 99:601-8 Mr '15; Abstract. Met & Chem Eng 13:187-8 Mr '15; Discussion. Am Inst Min E Bul 101:1141-2 My '15

- Metallurgical treatment of the low-grade and complex ores of Utah. D. A. Lyon, R. H. Bradford, S. S. Areutz, O. C. Ralston, and C. L. Larson. U S Bur Mines Tech Pa 90:1-39 '15

- Method of treating carnotite ores. Eng & Min J 99:864 My 15 '15

- Mining and milling of lead and zinc ores in the Wisconsin district, Wisconsin. C. A. Wright. II plan U S Bur Mines Tech Pa 95: 20-33 '15

- Mining and reduction of quicksilver ore at the Oceanic mine, Cambria, Cal. C. A. Heberlein. diags Am Inst Min E Bul 98:497-504 F '15; Discussion. 101:1139-41 My '15

- Notes on Homestake metallurgy; stamp milling; analysis of lost time; cost. A. J. Clark. II Am Inst Min E Bul 102:1381-1400 Jl '15; Abstract. Met & Chem Eng 13:764-6 O 15 '15; Discussion. Am Inst Min E Bul 108:2453-4 D '15

- Ore dressing at Clausthal. E. M. Heriot. diags Eng & Min J 100:425-9 S 11 '15

- Rotary kilns for desulphurization and agglomeration. S. E. Doak. Am Inst Min E Bul 105: 2061-6 S '15; Same. Iron Age 98:574-6 S 9 '15; Same. Iron Tr R 57:1178-9+ D 16 '15; Same cond. Eng & Min J 100:601-2 O 9 '15

- Shaft-rookhouse practice in the copper country. L. H. Goodwin. II diags Eng & Min J 99:1061-6, 1107-10; 100:7-12, 53-7 Je 19-Jl 10 '15

- Smelting methods at Magistral Durango, Mex. R. W. Bissell. Sch Mines Q 36:22-9 N '14

- Vogt process of recovering rare elements. Eng & Min J 100:106-7 Jl 17 '15

- Wet ores in charcoal blast furnaces. R. H. Lee. Met & Chem Eng 13:882 D 1 '15

- See also* Concentrating tables; Copper metallurgy; Crushing; Crushing machinery; Cyanide process; Electrometallurgy; Electrostatic separation of ores; Filters and filtration (metallurgy); Flotation process; Gold milling; Hardinge mill; Hydrometallurgy; Magnetic separation of ores; Metallurgical patents; Metallurgical plants; Metallurgy; Smelting; Stamp mills; Tailings; Trent agitators; Tube milling

**Ore treatment—Continued****Cost**

- Milling at the Tonopah Belmont plant. Eng & Min J 99:1083 Je 19 '15  
 Milling costs at the Goldfield consolidated plant. Eng & Min J 99:1036-7 Je 12 '15  
 Milling costs in Alaska. Eng & Min J 100:347 N 20 '15

**Oregon**

See also Mines and mineral resources—Oregon

**Oregon society of engineers**

Report for the year 1914. O. E. Stanley. Assn Eng Soc J 54:123-6 Mr '15

**Ores**

See also Assaying; Iron ores; Metallurgy; Metals; Mines and mineral resources; Ore deposits; Ore treatment

**Organic chemistry. See Chemistry, Organic****Organization in engineering**

Organization for bridge work by day labor, St. Louis. Eng N 74:605 S 23 '15

See also Highway administration

**Organization in industry**

Address to the British association engineering section. H. S. Hele-Shaw. Engineer 120:255-7 S 10 '15

Big Bill Agnew and blue Monday; true story, showing the relation of the engine house organization to engine failures. H. D. Wolcomb. Ry Age (Mech ed) 89:533-6 O '15

Central-station sales department organization and work. F. D. Beardslee. Elec R & W Elec'n 65:1073-9 D 5 '14

Human element. J. Hartness. Iron Age 94:1297 D 3 '14; Same. Metal Work 82:780 D 11 '14; Same. Am Gas Light J 102:17-18 Ja 11 '15; Same. Am Soc M E J 37:2-3 Ja '15

Human factors in engineering practice. J. Calder. Stevens Ind 82:193-206 J1 '15

Individual in modern management. F. B. Gilbreth and L. M. Gilbreth. Iron Age 96:802-4 O 7 '15

Organization at Delray. N. G. Reinicker. Power 42:343-4 S 7 '15

Railway repair shop organization. H. Gardner. Ry Age (Mech ed) 89:536-8 O '15

Scientific management for the factory of moderate size. D. T. Farnham. Eng M 50:46-51 O '15

Ultimate type of management. J. H. Van Deventer. Eng M 49:394-401 Je '15

See also Factory management; Office management; Railroads—Management; Scientific management

**Oriental consolidated mining company, Chosen, Aisa**

Oriental consolidated; report for year ended July 31, 1914. Eng & Min J 99:197 Ja 23 '15

**Orientation**

Relation between spectral color and stimulation in the lower organisms. S. O. Mast. J Fr Inst 180:617-19 N '15

**Ornament. See Decoration and ornament****Osage orange**

Important constituents in the fruit of the osage orange. J. S. McHargue. J Ind & Eng Chem 7:812-13 J1 '15

**Oscillators**

Electrical porcelain. I. Testing with a high-frequency oscillator. II. The problematical points of manufacture. III. Experiences and experimental investigations. E. E. F. Creighton. II Am Inst E E Pro 34:753-841 My '15; Discussion. 34:2622-45 N '15

High-frequency oscillator for porcelain-insulator testing. II diag Elec R & W Elec'n 65:880-1 My 3 '15; Elec W 65:1207 My 3 '15; Ry R 56:668 My 15 '15

Oscillating circuit-controller for railway signal circuits. II Elec R & W Elec'n 65:1193-4 D 19 '14

Production of damped oscillations. L. O. Heath. diag Gen Elec R 18:1110-17 D '15

See also Audion; Fessenden oscillator

**Oscillograph**

Cathode ray tube and its application. M. E. Tressler. diag Gen Elec R 18:816-20 Ag '15

Investigation of dielectric losses with the cathode ray tube. J. P. Minton. II Am Inst E E Pro 34:1115-65 Je '15

**Osters**

Basket willow culture. G. N. Lamb. II map U S Agric Farmers' Bul 622:1-34 '14

**Osmosis**

Electrolytic endosmose. H. G. Byers and C. H. Walter. diag Am Chem Soc J 38:2284-91 N '14

**Osmotic pressure**

Osmotic pressure and concentration in solutions of electrolytes, and the calculation of the degree of ionization. S. J. Bates. Am Chem Soc J 37:1421-45 Je '15

**Ostend, Belgium****Sewerage**

Sewage purifying plant at Ostend. Sci Am 112:50 Ja 9 '15

**Otis & Clark, architects**

Examples of the work of Otis & Clark. H. Croly. II plans Arch Rec 37:385-409 My '15

**Ottawa, Ontario****Water supply**

Another water-supply project for Ottawa. J. A. Macdonald. Eng N 73:43 Ja 7 '15

Water filtration hold-up at Ottawa, Ont. Eng N 72:1167 D 10 '14

**Outdoor life**

Forests and recreation. W. H. Miller. II Am For 21:543-9 Ap '15

Ovens. See Coke ovens; Electric ovens; Stoves

**Overhead expense**

Apportioning indirect production expense. A. M. Burroughs. Metal Work 83:284-6, 316-18 F 19-26 '15

Appraisal of overhead costs. H. P. Gillette. Elec W 65:41-2 J1 3 '15

Cost of doing business. G. W. Hill. Dom Eng 71:306-7 Je 12 '15

Distributing overhead expense. N. T. Flicker. Eng M 49:553-9, 690-7, 863-71; 50:58-64, 254-61, 390-400 J1-L '15

Doing business on low overhead expense; W. B. Perry electric company, of Brooklyn. Elec W 65:544-6 F 27 '15

Fair overhead charges allowed; Bronx gas and electric company. Elec Ry J 46:331 O 16 '15

Finding costs in the steel foundry. G. Muntz. Iron Tr R 57:482-4 S 9 '15

Merchant plumber's overhead expense. J. J. Foy. Metal Work 83:251-3 F 12 '15

Overburdening the overhead expense. H. Whitehead. Dom Eng 72:317-18 S 11 '15

Overhead charges in valuation. R. H. Tingley. Ry Age 58:1247-8 Je 11 '15

Overhead expense per man per hour. W. A. Fink; R. H. Pfliug-Felder. Dom Eng 71:335-6 Je 19 '15

Overhead expenses in the main works of the Westinghouse electric & manufacturing company. G. D. Piper. Elec Rty J 44:1839-40 D 19 '14

Relation between production and costs. H. L. Gantt. Am Soc M E J 37:466-8 Ag '15; Same. Am Gas Light J 103:54-5 J1 26 '15; Same. Iron Age 96:16-18 J1 1 '15; Same. Iron Tr R 57:287-8+ Ag 5 '15; Same. Mach 21:1000-2 Ag '15; Same. Textile World 49:510-13 Ag '15; Discussion. Am Soc M E J 37:468-75 Ag '15

Sheet metal contractor's overhead expense. Metal Work 83:225-6 Je 25 '15

Valuation of water works properties; the appraisal of overhead costs. H. P. Gillette. Eng & Contr 44:14-18 J1 7 '15

What constitutes overhead. E. H. Fish. Eng M 49:488-97 J1 '15

What is cost of material and labor? W. A. Fink. Dom Eng 72:105-6 J1 24 '15

**Oxidase**

Retention of activity by urease and by oxidase after exposure to the temperature of liquid air. J. S. Henburn and C. B. Bazzone. bibliog J Fr Inst 180:603-5 N '15

**Oxidation**

Electrochemical oxidation of hydrazine sulfate and ammonium hydroxide. J. W. Turrentine and J. M. Olin. Am Chem Soc J 37:1114-22 My '15

**Oxidation—Continued**

Oxidation of sulfides with potassium iodate.  
R. S. Dean. *Am Chem Soc J* 37:1134-7 My '15

**Oxidation potential**

Measurement of oxidation potentials at mercury electrodes: the stannic-stannous potential. G. S. Forbes and E. P. Bartlett. *Am Chem Soc J* 36:2030-40 O '14

**Oxonium salts**

Organic oxonium compounds: dimethylpyrone-hydrochloride. H. N. K. Rørdam. *Am Chem Soc J* 37:557-67 Mr '15

**Oxyacetylene flame**

Acetylene welding of gas pipe. G. H. Manlove. *Il Iron Tr R* 56:272-3 F 4 '15

Autogenous pipe welding. *Il Iron Age* 95:296-7 F 4 '15

Autogenous soldering or welding of aluminum. *Il Mach* 21:369-71 Ja '15

Cutting down a steel stack. *Il Power* 41:888 Je 29 '15

Cutting up a bridge with the oxyhydrogen torch. *Il Sci Am* 112:71 Ja 16 '15

Data on oxy-acetylene welding and cutting equipment. *Eng & Contr* 43:543-4 Je 16 '15

Dissolved and self-generated acetylene. M. K. Dunham. *Iron Age* 96:351-3 Ag 13 '15

Flashback in the welding torch. M. K. Dunham. *diag Mach* 22:50-1 S '15

Flashback in the welding torch. S. W. Miller. *Mach* 22:233-4 N '15

Gas-weld rail bonding. J. R. Brown. *Il Elec Ry J* 46:1087-9 N 27 '15

Gas welding for pipe lines. J. F. Springer. *Il Munic J* 38:254-6 F 25 '15

High temperature flames in metal working. H. R. Swartley, Jr. *Iron Age* 96:1123 N 11 '15

How time and money were saved by welding; oxy-acetylene process saved 13 days. *Il Foundry* 43:235 Je '15

Imperial oxy-acetylene equipment. *Il Foundry* 43:188 Ap '15; *Il Elec Ry J* 45:517 Mr 18 '15; *Ry Age (Mech ed)* 89:197 Ap '15

Oxy-acetylene process for boiler work; report of committee of Master boiler makers' association. *Ry Age (Mech ed)* 89:309-12 Je '15; Same cond. *Ry Age* 58:1165-6 Je 4 '15

Oxy-acetylene process of welding. H. Cave. *Il diags Am Soc M E J* 36:208-14 Je '14; Same cond. *Eng M* 47:750-3 Ag '14; Same cond. *Eng & Contr* 42:199-200 Ag 26 '14

Oxy-acetylene welding. A. H. Waychoff. *diags Sci Am S* 79:182 F 27 '15

Oxy-acetylene welding and cutting equipment. S. W. Miller. *Il diags Mach* 22:85-90 O '15

Oxyacetylene welding at Great Falls, Mont. *diags Eng & Min J* 99:534 Mr 20 '15

Oxy-acetylene welding eliminates joints in gas mains; with cost figures. *Il Eng Rec* 71:182 F 6 '15

Oxyacetylene welding in mining. *Il diag Eng & Min J* 99:393-7 F 27 '15

Oxyacetylene welding in pipe work. W. L. Roueche. *Il Power* 41:808-11 Je 15 '15

Oxy-acetylene welding; International railway general foremen's association discussion. *Ry Age (Mech ed)* 89:425-8 Ag '15; Same cond. *Ry Age* 59:187 Ji 23 '15

Pipe welding at Panama. Pacific exposition. *Il Metal Work* 34:237-8 Ag 30 '15

Portable welding outfit for metallurgical works. *Il Met & Chem Eng* 13:194 Mr '15

Practice of the oxy-acetylene welding process. S. W. Miller. *Il Mach* 22:106-17, 215-19 O-N '15

Safety in oxy-acetylene welding. *Eng M* 49:596 Ji '15

Strength of welds made by the acetylene process; abstracts. A. Campion and W. C. Gray. *Ind Eng* 14:415-16 O '14; *Am Soc M E J* 37:355 Je '15

Welding broken machine parts. *Il Power* 42:687-8 N 16 '15

Welding copper and copper alloys by acetylene methods. J. F. Springer. *Ry Age (Mech ed)* 89:367-9 Ji '15

Welding defective cores in paper mill by the Prest-O-Lite process. *Il Met & Chem Eng* 13:770 O 15 '15

Welding the joints of steel gas mains. *Il Eng N* 73:233-4 F 4 '15

Why acetylene is the combustible gas used for autogenous welding. M. K. Dunham. *Mach* 21:1017-18 Ag '15

**Oxy-acetylene generators**

Safe and unsafe oxy-acetylene generators. A. C. Morrison. *Sci Am S* 79:371 Je 12 '15

**Oxygen**

Determination of gases dissolved in waters and effluents. A. A. Swanson and G. A. Hulett. *diags Am Chem Soc J* 37:2490-500 N '15

Effect of oxygen on steel quality. J. A. Pickard and F. M. Potter. *Iron Tr R* 57:136-7+ Ji 15 '15

Electrolytic production of oxygen and hydrogen—a typical plant. *Il Elec R & W Elec'n* 66:1170-1 Je 19 '15

Free energy of oxygen, hydrogen, and the oxides of hydrogen. G. N. Lewis and M. Randall. *Am Chem Soc J* 36:1969-93 O '14

Oxy-acetylene welding and cutting equipment; manufacture of oxygen. S. W. Miller. *diags Mach* 22:88-92 O '15

Plumbicon process for producing oxygen and nitrogen from atmospheric air; abstract. G. Kassner. *Am Soc M E J* 37:119 F '15

Possible applications of oxygen in metallurgy. J. E. Johnson, Jr. *Met & Chem Eng* 13:483-4 Ag '15

See also Oxidation

Oxynitrilase

Enzymes: the synthetic and hydrolytic oxynitrilase. V. K. Kriebel. *Am Chem Soc J* 37:2205-13 S '15

**Oysters**

See also Pearl fisheries

**Ozonators**

Ozone apparatus as a business proposition. *Il Elec R & W Elec'n* 66:33-4 Ja 2 '15

**Ozone**

Air ozonation. M. W. Franklin. *J Ind & Eng Chem* 8:850-5 O '14; Same; with discussion. *Am Soc Heat & V E* 20:237-64 '14; Excerpta. *Heat & Ven* 11:28-34 O '14; *Metal Work* 33:722-3 My 21 '15

Experiment with ozone as an adjunct to artificial ventilation. A. M. Feldman. *Heat & Ven* 12:35-6 Mr '15

Formation of ozone in the upper atmosphere. J. N. Fring. *Sci Am S* 79:286-7, 303 My 1-8 '15

Ozone—an aid to factory ventilation. V. D. Greene. *diag Eng M* 49:517-25 Ji '15

Ozone and its applications. M. W. Franklin. *Am Soc Heat & V E* 19:128-40 '13

Ozone in ventilation. J. C. Olsen and W. H. Ulrich. *Sci Am S* 79:34-5 Ja 16 '15

Ozone treatment for drinking water. *Il Engineer* 120:371 O 15 '15

**P****Pacific coast**

Panama canal and the ports of the Pacific. A. J. Quigley. *Il maps Eng M* 48:493-7, 641-57, 808-26; *diag I* 17 Ja-Apr '15

**Pacific coast claim agents' association**

7th annual meeting, San Francisco, June 24-26; abstracts of papers. *Il Elec Ry J* 46:8-12 Ji 3 '15

**Pacific electric railway**

All-steel passenger cars for the Pacific electric railway. F. F. Small. *Il diags Elec Ry J* 46:488-92 S 18 '15

Businesslike methods in handling freight by electric railroads. J. McMillan. *Il Elec Ry J* 46:482-7 S 18 '15

Electric railway paradise. P. Shoup. *Il map Elec Ry J* 46:475-80 S 18 '15

Operation of the Pacific electric railway. *Il map Ry Age* 59:225-9 Ag 6 '15

**Pacific gas & electric co.**

Financial development and physical growth. *Il Elec W* 65:1669-70 Je 26 '15

Interconnected systems serving San Francisco; details of the generating equipments and transmitting circuits tied in with the larger

- Pacific gas & electric co.—Continued**  
system of the Pacific gas & electric company, which covers half of California. *Il* diags map Elec W 65:1356-82 My 29 '15  
9th annual report. Elec W 66:437-3 Ag 21 '15  
Pacific gas & electric company valuation methods. Elec W 65:569-70 F 27 '15
- Pacific highway**  
Interstate bridge over the Columbia river, Portland, Ore. E. E. Howard. diags Eng N 73:1218-21 Je 24 '15  
Pacific highway interstate bridge over the Columbia river and its approaches between Vancouver, Wash., and Portland, Ore. E. E. Howard. diags Eng & Contr 43:540-3 Je 18 '15  
Special pier and floor design feature Pacific highway interstate bridge. diags Eng Rec 72:18-20 Jl 3 '15
- Packing**  
Buhne fibrous babbitt packing. *Il* Power 42: 616 N 2 '15  
Experiences in packing valves. Eng & Contr 43:523 Je 9 '15  
Gland packing. diags Elec W 65:416 F 13 '15  
Metallic packing for valve stems. S. H. Farnsworth. diags Power 41:648 My 11 '15  
Metallic packing substituted for packing sleeve. E. W. Creed. diag Power 42:384 S 14 '15  
Sullivan piston and valve stem packing. *Il* Ry Age (Mech ed) 89:596-7 N '15; Same. Ry Age 59:1019 N 28 '15  
See also Packing rings
- Packing for shipment**  
Packing for South America. Eng M 49:754-5 Ag '15  
Packing of machinery, etc., for shipment abroad. H. T. Durant. Eng & Min J 99:205 Ja 23 '15  
Time waste in handling malleable fittings; use of cardboard shipping cartons. W. J. Wooley. Metal Work 84:192-3 Ag 6 '15
- Packing house products**  
Contributions of the chemist to the packing house products industry. A. Lowenstein. J Ind & Eng Chem 7:942-4 N '15
- Packing houses**  
Electricity in packing plants. *Il* Elec R & W Elec'n 66:145-3 Ja 23 '15
- Packing machine**  
Electromagnetic nail packing machine. *Il* Iron Age 95:900-1 Ap 22 '15
- Packing rings**  
Chuck for finishing air pump packing rings. F. L. Stewart. diags Ry Age (Mech ed) 89: 589 N '15  
Piston valve packing rings. W. F. Lauer. diags Ry Age (Mech ed) 89:583 N '15
- Pageants**  
Lighting  
Lighting the pageant of Lexington. L. C. Porter. *Il* plan Elec W 66:209-10 Jl 24 '15  
Page patent bill. See Patent laws  
Painesville, Ohio
- Water supply**  
Small waterworks revamped under service. G. W. Knight and R. F. MacDowell. plan Eng Rec 72:287-8 S 4 '15
- Paint**  
Composition of paint vapors. C. A. Klein. J Ind & Eng Chem 7:99-102 F '15  
Contributions of the chemist to the paint and varnish industry. M. Toch. J Ind & Eng Chem 7:933 N '15  
Corrosion of iron. L. C. Wilson. Eng M 49: 55-66, 202-10 Ap-May '15  
Data on prepared paints for metal surfaces. H. A. Gardner. Eng & Contr 44:346-7 N 3 '15  
Doing without Europe. Sci Am 112:223 Mr 6 '15  
Formula for paint for use with spraying machines. A. H. Sabin. *Il* Eng N 73:40-1 Ja 7 '15  
Insulation of underground piping. Elec R & W Elec'n 67:194 Jl 31 '15  
Master car and locomotive painters' 46th convention. Ry Age 59:585-8 S 24 '15  
Master painters' 46th annual meeting. Ry Age (Mech ed) 89:539-42 O '15  
Mineral paints. J. M. Hill. Metal Work 84: 243 Ag 30 '15  
Paint a product of science and civilization. C. B. Heckel. Met & Chem Eng 13:806-11 N 1 '15  
Paint for engineering purposes. E. N. Percy. Power 41:234-5 F 16 '15  
Paint protection of the Panama canal lock-gates. H. Goldmark. Eng N 72:1227 D 17 '14  
Paint vehicles as protective agents against corrosion; with discussion. M. Toch. *Il* J Ind & Eng Chem 7:510-14 Je '15  
Painting defects; their causes and prevention. G. W. Thompson. *Il* J Ind & Eng Chem 7:138-45 F '15; Excerpts. Ry Age 57:1138-41 D 18 '14; Excerpts. Eng N 73:876-8 My 6 '15  
Paints for steel structures. Iron Tr R 56:1082-3 My 27 '15  
Paints to prevent electrolysis in concrete structures. H. A. Gardner. *Il* J Fr Inst 179: 312-36 Mr '15; Same. J Ind & Eng Chem 7:504-10 Ja '15; Same cond. Iron Tr R 57: 139-40+ J 15 '15; Abstracts. Eng N 73:136-7 Ja 21 '15; Eng Rec 71:465-6 Ap 10 '15; Am Soc M E J 37:297 My '15; Concrete Cem 6:310 Je '15  
Paints used in Havre de Grace bridge tests. Ry Age 59:87 Jl 9 '15  
Paints which resist darkening by gases, soot, etc. H. A. Gardner. Eng N 73:407 F 25 '15; Same. Ind Eng 15:79-80 Ag '15  
Prepared paints for metal surfaces. H. A. Gardner. Ry Age (Mech ed) 89:513-14 O '15; Same. Eng & Contr 44:346-7 N 3 '15  
Preservative coatings for steel. Iron Age 96: 23 Jl 1 '15  
Protection of iron and steel. J. W. Gibbons. *Il* Ry Age (Mech ed) 89:580-1 N '15  
Protection of iron and steel by paint films. A. Dubois. *Il* Sci Am S 77:35-8 F 7 '14; Same abr. Sci Am S 79:160 Mr 6 '15  
Reflection from painted surfaces. L. Bell. Elec W 65:211-13 Ja 23 '15; Same. Am Gas Light J 102:91 F 8 '15; Same cond. Ind Eng 15:80 Ag '15  
Study of some curious painting phenomena. H. A. Gardner. *Il* J Fr Inst 179:681-95 Je '15; Abstract. Am Soc M E J 37:418-17 Jl '15  
Study of vapors from drying paint films. E. H. King. diags J Ind & Eng Chem 7:502-4 Je '15  
Tar paint proves better than lead paint on pipes. B. Dibble. Eng Rec 72:249-50 S 18 '15; Same. Eng N 74:973-4 N 18 '15; Same cond. Eng & Contr 44:181 S 8 '15  
Washing paint charged to infected oil. Eng N 74:177 Jl 22 '15  
See also Corrosion and anti-corrosives
- Testing**  
Comparative exposure test of vehicles for paint. C. M. Chapman. Eng N 73:70-1 Ja 14 '15  
Paint and dye testing; use of the white flame arc as a standard. W. R. Mott. Sci Am S 80: 350-2 N 27 '15
- Paint shops**  
Piece work for the paint shop. H. Heffelfinger. Ry Age (Mech ed) 89:526 O '15
- Painting**  
Artistic painting and the old masters. M. Toch. *Il* J Fr Inst 179:47-58 Ja '15  
See also Mural painting and decoration; Paint; Painting, Industrial
- Painting, Industrial**  
Brushless paint shop. G. D. Babcock. *Il* Iron Age 96:798-6 O 7 '15  
Care and maintenance of gas holders. J. H. Braine. *Il* Am Gas Inst Pro 9:pt 1, 807-22 '14; Same cond. Am Gas Light J 101:373-5 D 7 '14  
Economical handling of maintenance of way painting. Ry Age 57:1134 D 18 '14  
Electric equipment for painting without a brush. *Il* Elec W 66:1050 N 6 '15  
Hints on painting exterior woodwork. *Il* Bldg Age 37:65-6 Jl '15  
Maintenance of way master painters' convention. Ry Age 57:1137-41 D 18 '14  
Maintenance of way master painters' 15th annual convention. Ry Age 59:668-9 N 19 '15

**Painting, Industrial—Continued**

Paint as an aid in making the public more friendly to the railroads. E: H. Brown. Ry Age 59:969 N 19 '15

Painting defects; their causes and prevention. G. W. Thompson. II J Ind & Eng Chem 7:126-45 F '15; Excerpts. Ry Age 57:1138-41 D 18 '14; Excerpts. Eng N 73:876-8 My 6 '15

Painting old brick walls. Bldg Age 37:24-5 My 15 '15

Study of some curious painting phenomena. H. A. Gardner. II J Fr Inst 179:681-95 Je '15; Abstract. Am Soc M E J 37:416-17 JI '15

See also Car painting; Concrete—Painting; Painting, Structural

**Painting, Structural**

Economy of skilled mechanics. E: H. Brown. Ry Age 57:1141 D 18 '14

Paint required for structural work. Eng & Min J 100:801-2 N 13 '15

Paints for steel structures. Iron Tr R 56:1062-3 My 27 '15

Proper painting for steel work. Iron Tr R 55:1036-7 D 3 '14; Same cond. Eng M 48:758-60 F '15

Some paint and painting factors. H. Lowe. Eng Rec 71:428 Ap 3 '15

See also Automobiles—Painting; Car painting; Concrete—Painting

**Paintings**

Artistic painting and the old masters. M. Toch. II J Fr Inst 179:47-58 Ja '15

**Paints. See Paint****Paleography. See Inscriptions****Palestine****Industries and resources**

Farming in Palestine. E. F. Beaumont. II Sci Am 113:162-3 Ag 21 '15

**Railroads**

See also Railroads—Palestine

**Palimpsests**

Fluorescent photographs of palimpsests. Sci Am 112:191 F 27 '15

**Palisades**

Making a road up the Palisades. II plan Eng N 74:998-1000 N 18 '15

Roadway up the Palisades. II Munic J 37:949-53 D 31 '14

**Palladium**

Determination of hydrogen in gas mixtures by means of colloidal palladium. G. A. Burrell and G. G. Oberfell. J Ind & Eng Chem 6:992-4 D '14

Determination of platinum, palladium and gold. A. M. Smoot. Eng & Min J 99:700-1 Ap 17 '15

**Panama (city)****Streets**

Road and street work in the city of Panama. H: W. Durham. II Good Roads n s 10:144-6 S 4 '15

**Water supply**

Early municipal water works at Panama. C. E. Davis. J Fr Inst 180:561-6 N '15

Panama-California exposition. See San Diego, California—Panama-California exposition

**Panama canal**

Design features of the Gatun river bascule bridge. P. L. Kaufman. plan Eng & Contr 44:18-14 JI 7 '15

Electricity in the construction and operation of the Panama canal. E: Schildhauer. II diags Gen Elec R 18:sup679-780 JI '15

Gatun dam; paper presented at meeting of Am. Soc. C. E., May 18, 1904. C. D. Ward. Sci Am S 79:247 Ap 17 '15

Large coaling stations on the Panama canal. II diag Eng N 74:254-6 Ag 5 '15

Pontoon railroad bridge across the Panama canal. diags Ry R 56:82-4 Ja 16 '15

Pontoon swing-bridge over the Panama canal. Eng N 73:126 Ja 21 '15

Purchasing supplies for the Panama canal. F. C. Boggs. Iron Age 96:1180-2, 1226-7 N 18-25 '15

Swinging pontoon bridge carries railroad across Panama canal. diags Eng Rec 71:270-1 F 27 '15

**Commercial aspects**

Effects of the Panama canal on railway traffic. Ry Age 57:1111-12 D 18 '14

Manufacturer's interest in the Panama canal. J. E. Springer. II Am Ind 15:13-15 Mr '15

Panama canal and the ports of the Pacific. A. J. Quigley. II maps Eng M 48:483-7, 641-57, 808-26; 49:1-17 Ja-Apr '15

What Panama canal means to commerce and trade; abstract. E. R. Johnson. Eng Rec 72:889-90 S 25 '15; Ry Age 59:605-6 O 1 '15

**Culebra cut**

Daily survey at Culebra cut safeguards passing vessels. Eng Rec 71:91 Ja 18 '15

Nature as a canal builder. Sci Am 113:354 O 23 '15

See also Panama canal—Slides

**Electric equipment**

Electric towing at Panama. II diag Elec Ry J 45:325-7 Ja 30 '15

Electricity in the construction and operation of the Panama canal. E: Schildhauer. II diags Gen Elec R 18:sup679-780 JI '15

Mechanical and electrical features of the Panama canal. E: Schildhauer. Elec R & W Elec'n 66:397 F 27 '15

Towing locomotives for the Panama canal. C. W. Larson. II diags Gen Elec R 18:101-17 F '15; Same cond. Eng N 73:145-7 Ja 28 '15; Ry Age 58:189-91 Ja 29 '15; Elec R & W Elec'n 66:187-91, 233-7 Ja 30-F 6 '15; Elec W 65:288-90 Ja 30 '15; Eng Rec 71:134-6 Ja 30 '15; Ry R 56:150-3 Ja 30 '15; Sci Am S 79:72-4 Ja 30 '15; Eng M 48:744-8 F '15; Int Marine Eng 20:161-2 Ap '15; Engineer 119:323-5 Ap 2 '15

**Equipment**

Coal handling at Panama. II plans Power 42:106-10 JI 27 '15; Abstract. Eng M 50:441-3 D '15

Experiences gained from reinforced-concrete barges built for the Panama canal. W. Rowland. diags Eng Rec 71:884-6 My 29 '15

Failure of Panama crane Ajax. F. H. Cooke. II diags Eng N 73:918-23 My 13 '15; Abstract. Eng M 49:584-7 JI '15

Failure of the great German crane of the Panama canal. Eng N 73:947-8 My 13 '15

Panama crane contract. F. H. Cooke. II diags Eng N 73:913-17 My 13 '15

**Locks**

Construction details of the Panama canal lock gates; with discussion. R. A. Pendergrass. II Eng Soc W Pa 30:692-736 N '14

Lock entrance caisson for the Panama canal. L: A. Mason. II diag plan Gen Elec R 18:210-16 Mr '15; Same cond. Eng N 72:1099-1103 D 3 '14

Paint protection of the Panama canal lock-gates. H: Goldmark. Eng N 72:1227 D 17 '14

**Maps**

Great relief map of the Panama canal. II Eng N 73:337-8 F 18 '15

**Model**

Five-acre model of the Panama canal. II Sci Am 112:866-7 Ap 17 '15

Panama canal in miniature operates at exposition. II Eng Rec 71:434-5 Ap 3 '15

Working model of the Panama canal at the exposition. Eng N 73:338 F 18 '15

**Slides**

Dredging work on the Panama canal slides. W. G. Comber. II maps Eng N 73:753-7 Ap 22 '15

How the slides develop at Panama. II Sci Am 113:373 O 30 '15

Panama slides; report to the Secretary of war. G: W. Goethals. II map Eng N 74:1009-15 N 25 '15; Same. Eng Rec 72:852-6 N 27 '15

Problem of the slides at Culebra. Sci Am 112:152 F 13 '15



**Panama Canal Zone**

New faunal conditions in the Canal Zone. H. E. Anthony. *Il Sci Am S* 79:104-6 F 13 '15  
See also Panama canal

**Public buildings**

Manufacture of hollow concrete block in the Canal Zone—the administration building. *Il Concrete Cem* 6:176-80 Ap '15

**Sanitary affairs**

Aeration basin of the new water purification plant at Miraflores. G. M. Wells. *Eng & Contr* 43:489-90 N 18 '14  
Early municipal water works at Panama. C. E. Davis. *J Fr Inst* 180:561-6 N '15

**Panama hats**

Your Panama hat; from the tropical jungles of South America to the American hat store. A. M. Jungmann. *Il Sci Am* 112:456-7 My 15 '15

Panama-Pacific international exposition. See San Francisco—Panama-Pacific international exposition

**Panama railroad**

Finances of Panama railroad. *Ry Age* 58:354-5 F 26 '15  
Underground wires on the Panama railroad. *Il Ry Age* 58:451-3 Mr 12 '15

**Pan-American financial conference**

Washington conference; memorandum of Ecuador delegation. V. Gonzales. *Am Ind* 15:27-8 J1 '15

**Pan-American road congress**

Meeting at Oakland, Cal., Sept. 13-17. Good Roads n s 10:181-7 O 2 '15  
Meeting at the Municipal auditorium, Oakland, Sept. 13-17. *Munic J* 39:515-16 S 30 '15  
Pan-American road congress and the organizations under the auspices of which it will be held. Good Roads n s 10:147-53 S 4 '15  
Preliminary plans and list of officers. *Munic Eng* 48:278 Ap '15  
Proceedings at Oakland. *Eng Rec* 72:367-8, 397-8 S 18-25 '15

**Pan-American scientific congress**

Pan-Americanism. G. L. Swiggett. *Met & Chem Eng* 13:513-14 Ag '15

**Pan-American scientific congress, 2d**

Executive committee. *Eng & Min J* 100:790 N 13 '15  
Program. *Am Inst Min E Bul* 108:xvii-xx D '15  
2d congress to be held in Washington, D. C., Dec. 27, 1915, to Jan. 8, 1916; committees. *Eng & Min J* 99:622 Ap 3 '15

**Pancreas**

Digestive activity and composition of different fractions of the pancreas. J. H. Long, M. Hull, and H. V. Atkinson. *Am Chem Soc J* 37:2427-30 O '15

Reaction of the pancreas. J. H. Long and F. Fenger. *Am Chem Soc J* 37:2213-19 S '15

See also Digestive ferments

**Pancreatic amylase**

Comparison of certain properties of pancreatic and malt amylase preparations. H. C. Sherman and M. D. Schlesinger. *Am Chem Soc J* 37:1905-19 My '15

**Panel boxes**

Panel box for industrial plants. C. J. Whitfield. *diags Elec W* 66:73-4 J1 10 '15

**Panics**

Panic economies and emergency problems with especial reference to the present industrial situation. F. A. Waldron. *Am Soc M E J* 36:413-17 D '14; Same cond. *Ind Eng* 14:397-400 O '14; Discussion. *Am Soc M E J* 36:417-19 D '14

See also Business depression

**Papaverine**

New color reaction for papaverine. L. E. Warren. *Am Chem Soc J* 37:2402-6 O '15

**Paper**

Diffusing media; papers and inks. *Illum Eng Soc* 10:379-87 no 5 '15

Diffusing media; the optical properties of photographic papers. *Illum Eng Soc* 10:388-98 no 5 '15

New field for the printer: advertising on paper wrappers. T. E. Stark. *Inland Ptr* 56:45-7 O '15

Seventy years of inventions. *Sci Am* 112:517-18 Je 5 '15

Special paper for recording instruments, drawings and similar purposes. *Met & Chem Eng* 13:193 Mr '15

See also Photographic paper

**Testing**

From paper-mill to pressroom. W. B. Wheelwright. *Inland Ptr* 55:828-30 S '15

Testing the gloss of paper and other materials. *diag Illum Engr* 8:425-7 O '15

Paper, Photographic. See Photographic paper  
Paper making and trade

Contributions of the chemist to the pulp and paper industry. F. I. Moore. *J Ind & Eng Chem* 7:292-3 Ap '15

Electricity in manufacture of wood-pulp paper. *Il Elec R & W Elec'n* 67:223-6 Ag 7 '15

Electricity in paper making. W. B. Conant. *Il Elec R & W Elec'n* 66:371-5 F 27 '15

Evolution of the pulp and paper industry. T. J. Keenan. *Sci Am S* 80:131 Ag 28 '15

From paper-mill to pressroom. W. B. Wheelwright. *Il Inland Ptr* 54:531-3, 655-6, 791-2; 55:81-3, 304-6, 377-8, 525-7, 681-2, 822-30; 56:93-5, 204 Ja-N '15

Long price-list. *Inland Ptr* 54:501-2 Ja '15

Paper and stationery trade of the world. G. Dawe. *U S Sp Cons Rep* 73:1-453 '15

Papermaking and its machinery. *Engineer* 120:309-10, 332-4, 358-61, 380-3, 403-5, 426-8 O 1-N 5 '15

Progress in chemical pulp industry; abstract. A. Klein. *J Fr Inst* 179:507-8 Ap '15

Special prices on paper to printers. B. Hope. *Inland Ptr* 54:341-3 D '14

Sulphite-solution plant of reinforced concrete: four 99-foot towers 8.5 feet in diameter with a special tile lining. *Il Eng Rec* 70:610 D 5 '14

See also Paper mills

**Paper-making machinery**

Electricity in paper making. W. B. Conant. *Il Elec R & W Elec'n* 66:371-5 F 27 '15

Papermaking and its machinery. *Il diags Engineer* 120:332-4, 358-61, 380-3, 403-5, 426-8 O 8-N 5 '15

**Paper mills**

Electricity saves paper mill \$400 a month. *Il Elec W* 65:673 Mr 13 '15

Paper mill industry. W. L. Merrill. *Am Inst M E Pro* 34:3044-7 D '15

Paper mill power plants. W. Weaver. *Power* 42:349 S 7 '15

See also Paper making and trade

**Paper money**

Comfort for workers in Washington's government buildings. D. A. Willey. *Il Sci Am S* 78:373-4 D 12 '14

**Paraguay**

Roosevelt-Rondon scientific expedition. L. E. Miller. *Il Sci Am S* 79:248-9 Ap 17 '15

**Parallax****Stars**

Photographic determination of stellar parallaxes with the 60-inch reflector of Mount Wilson observatory. *Sci Am* 113:153 Ag 21 '15

Parallel operation. See Dynamos

**Parcel post**

Efficiency in the post office department. *Ry Age* 57:1110-11 D 18 '14

Government view of government management. *Ry Age* 59:551-3 S 24 '15

Parcel post and its effects on railway revenues; abstracts. V. J. Bradley. *Ry Age* 57:1046 D 4 '14; *Eng M* 48:593-6 Ja '15

Shipping ore by parcel post. *Eng & Min J* 100:348 Ag 28 '15

See also Mail handling; Railway mail service

Parenthetical clauses. W. P. Root. *Inland Ptr* 55:477-8 J1 '15

**Paris**

Impressions of a member of the institute, now in Paris. C. Butler. *Am Inst Arch J* 3:495-6 N '15

## Paris—Continued

## Siege, 1870

Use of balloons during the siege of Paris; table and charts showing number of ascensions and results. *Sci Am S* 80:229 O 9 '15

## Parks

Common sense labels on park trees. *J. J. Levison. Am For* 21:1062-3 N '15  
Concrete park seats. *W. B. Conant. II diag Munic J* 38:592-3 Ap 29 '15  
Jamestown's hundred acre lot. *S. W. Allen. II Am For* 21:567-70 Ap '15  
Methods and costs of planting a small park to grass, making paths and planting hedge. *H. R. Ferriss. Eng & Contr* 43:320 Ap 7 '15  
Park engineering. *W. T. Lyle. Munic J* 38:660-1 My 13 '15  
Playground for a small city; Jones park, East St. Louis. *W. Webb. II Munic Eng* 47:424-6 D '14

See also Baseball parks; St. Louis—Park department; Zoological gardens

## Parks, National. See National parks

## Parlor cars

Steel parlor cars for Waterloo-Cedar Rapids line. *II plan Elec Ry J* 46:932-4 My 15 '15

## Parrish museum. See Southampton, Long Island—Parrish museum

## Parthenogenesis

Recent studies in the dynamics of living matter. *D. W. Thompson. Sci Am S* 80:301 N 6 '15

## Partitions

Partitions of translucent pressed-glass units. *II Eng N* 72:1269 D 24 '14

## Partnership

Is a profit sharer always a partner? *E. J. Buckley. Metal Work* 82:803 D 18 '14

Legal principles governing the determination of partnership assets. *C. R. Cross. J Account* 19:97-106 F '15

Partnership liquidation. *S. Walton. J Account* 19:146-8 F '15

Partnership settlements. *S. Walton. J Account* 20:236-8 S '15

Powers and liabilities of partners. *Dom Eng* 71:164 My 8 '15

See also Commercial law

## Pasadena, California

## Lighting

Municipal operation in Pasadena, Cal.; analysis and review of annual reports. *Elec W* 65:1171-3 My 8 '15

## Pascal, Jean Louis

Institute gold medalist, 1913. *W. Cook. II por Am Inst Arch J* 3:19-26 Ja '15

## Passaic, New Jersey

## Sanitary affairs

Collecting ashes and garbage in Passaic. *A. Reid. Munic J* 38:35-6 Ja 14 '15

## Passaic valley sewer

Constructing Passaic valley pumping station. *II plan Munic J* 38:341-44 Mr 18 '15

Constructing Passaic valley sewer. *II plan diag Munic J* 38:213-17 F 18 '15

Constructing pumping station in unbraced cofferdam formed by outside walls. *II plans Eng Rec* 71:292-4 Mr 6 '15

Construction features on the Passaic valley sewer. *II diag Munic J* 38:59-62 Ja 21 '15

Tunnel driving record on Passaic valley sewer. *Munic J* 38:506 Ap 15 '15

## Passenger traffic

Passenger mill plans. *Textile World* 48:445-7 Ja '15

## Passenger fares. See Railroads—Fares

## Passenger traffic officers, American association of. See American association of passenger traffic officers

## Passivity

Passivity of metals. *H. G. Byers and S. C. Langdon. diag Am Chem Soc J* 86:2004-11 O '14

Phenomenon of passivity in connection with ferrous alloys of different composition and structure. *H. W. Moseley. Am Chem Soc J* 37:2326-33 O '15

## Patent laws and legislation

Application for and prosecution of applications for United States letters patent. *S. C. Mastick. J Ind & Eng Chem* 7:874-82 O '15

Big handicap to industry. *L. W. Moffett. Iron Tr R* 56:557-60 Mr 18 '15

Contractual rights relating to letters patent; Actions for infringements. *S. C. Mastick. J Ind & Eng Chem* 7:984-91 N '15

Court of appeals decision in the pyrophoric alloy suit. *Met & Chem Eng* 13:145-6 Mr '15

Court rules on validity of foundation patent. *Eng Rec* 71:154-5 Ja 30 '15

Decision in the United shoe machinery case. *Sci Am* 112:322+ Ap 3 '15

Hearing of the proposed amendment of the patent laws. *L. H. Baekeland and others. Met & Chem Eng* 13:76-81 F '15

Hearing on the Paige patent bill. *Textile World* 48:468-75 F '15

Major and minor patents proposed. *S. E. Hitt. Iron Tr R* 56:723 Ap 8 '15

Patent legislation. *C. D. Paige. Textile World* 49:202-5 My '15

Patents and the courts. *A. B. See. Am Ind* 15:32-3 Jl '15

Patents involved in shoe machinery decision. *Elec W* 65:825-6 Mr 27 '15

Theory and statement of the law relating to patents generally and to patents for compositions of matter and chemical processes specifically. *S. C. Mastick. J Ind & Eng Chem* 7:789-97 S '15

Times of priority in Germany and France. *Sci Am* 113:4 Jl 3 '15

Use of patented articles: court decisions in the several states as to conditions under which cities may contract for patented pavements and other articles. *J. Simpson. Munic J* 38:13-15 Ja 7 '15

Use of patented pavements by cities. *Eng N* 73:507 Mr 11 '15; Same. *Sci Am* 112:323+ Ap 8 '15

## Compulsory working

Coal-tar dyes and the Paige bill; compulsory working of patents. *B. C. Hesse. J Ind & Eng Chem* 7:963-74; Discussion. *H. E. Stonebraker; B. C. Hesse. J Ind & Eng Chem* 7:974-8 N '15

Commissioner of patents on compulsory licenses. *T. Ewing. Sci Am* 112:248 Mr 13 '15

Compulsory licenses. *Sci Am* 112:331 Ap 24 '15

Compulsory licenses and working clause. *Sci Am* 112:591 Je 12 '15

Compulsory working of patents. *S. S. Dale. Sci Am* 113:189 S 4 '15

Compulsory working of patents in the United States, Germany and Great Britain. *B. C. Hesse. J Ind & Eng Chem* 7:304-7 Ap '15; Same. *Sci Am S* 80:94-5 Ag 7 '15

Symposium on compulsory working of patents and designs in England. *J Ind & Eng Chem* 7:307-17 Ap '15; Same cond. *Sci Am S* 80:95-6 Ag 7 '15

Working clause in the patent law. *Textile World* 49:170-1 My '15

## Patent lawyers

Word about coupon attorneys or those of the "no patent no pay" variety. *Sci Am* 113:431 N 13 '15

## Patent office. See United States—Patent office

## Patents

Danger of throwing inventions open to the public. *H. D. Hibbard. Met & Chem Eng* 13:206 Ap '15

Donation of patents to the public. *Sci Am* 112:433 My 8 '15

How shall patented materials or processes on public works be handled? *D. B. Luten; S. Whinery. Eng Rec* 72:546-9 O 30 '15

How shall patented materials or processes on public works be handled? *G. C. Warren; S. Whinery. Eng Rec* 72:511-13 O 23 '15

How to proceed in obtaining a patent. *S. Roth. Metal Work* 84:501-4 O 15 '15

Inventors too cautious. *Sci Am* 113:106 Ag 7 '15

Needed changes in the patent system. *Met & Chem Eng* 13:468-9 Ag '15

**Patents—Continued**

- Patents and foreign competition; by a British chartered patent agent. *Engineer* 119:108-7 Ja 29 '15; Discussion. 119:158, 182, 206, 226 F 12-Mr 6 '15
- Patents and their purpose; notes of historic interest. J. L. Macauliffe. *Sci Am S* 79:854-5 Je 5 '15
- Proposed patent reform. *Eng & Min J* 100:531-2 S 25 '15
- Public recognition of patents. G: C. Warren. *Munic Eng* 48:172-7 Mr '15
- Railroad supply co. wins its case against infringers of the Wolhaupter patents. *Il Ry R* 56:60-6 Ja 9 '15
- Report of the commissioner of patents. *Sci Am* 112:205+ F 27 '15
- Rights of joint owners of patents. *Sci Am* 113:226 S 11 '15
- State should deal directly with patentees of processes and materials in public work. S. Whinery. *Eng Rec* 72:73-4 JI 17 '15
- Suggestion in patent reform. *Sci Am* 112:414 My 1 '15
- Why is the patent mania? W. E. Greenawalt. *Eng & Min J* 99:543-4, 1040-1 Mr 20, Je 12 '15
- Why is the patent mania, or why is the patent office? S. Croasdale. *Eng & Min J* 99:250-1, 744-5 Ja 30, Ap 24 '15
- See also Automobiles—Patents; Chemical patents; Inventions; Metallurgical patents; Patent laws and legislation; Patent lawyers; Pavements—Patents; Trademarks; United States—Patent office
- Patents, Compulsory working of.** See Patent laws and legislation—Compulsory working
- Pathological psychology.** See Psychology, Pathological
- Patriotism**
- Random reflections. *Sci Am* 112:326+ Ap 3 '15
- Pattern making**
- Chords of angles from one to ninety degrees. S. L. Cook. *Foundry* 43:416a O '15
- Inexpensive base plate pattern. S. B. Phelps. *diags Foundry* 43:466+ N '15
- Lengths of chords for segments of different circles. S. L. Cook. *Foundry* 43:322a Ag '15
- Making a herringbone grate pattern. E. L. Scillitoe. *diags Foundry* 43:184 My '15
- Outside diameters for polygons. S. L. Cook. *Foundry* 43:454a N '15
- Patternmaker's table for rounding corners and other useful tables. S. L. Cook. *Foundry* 43:182a My '15
- Patternmaking for molding machine work. E. L. Chase. *Iron Age* 96:932-3 O 21 '15
- Reducing the cost of foundry patterns. D. Gordon. *Il diags Iron Age* 95:127-9 Je 10 '15
- See also Foundry practice; Sheet metal work—Pattern making
- Pattern storage**
- Miscellaneous stands for use in the foundry. A. Hill. *diags Foundry* 43:301-3 Ag '15
- Pattern storage systems for factories. J: G. Shirley. *Iron Age* 96:304-6 Ag 5 '15
- Place for pattern plates. F. West. *Il Foundry* 43:303 Ag '15
- Pavements**
- Advantages and disadvantages of the single gutter pavement. W. G. Kirchoffer. *Eng & Contr* 44:190-1 S 8 '15
- American society of municipal improvements convention, Dayton, Ohio. *Eng N* 74:810-12 O 21 '15
- Appellate court of the state of New York and the question of allowances for paving over mains in valuation work. J: W. Alvord. *Am Water Works Assn J* 2:465-81 S '15; Same cond. *Eng & Contr* 48:533-5 Je 16 '15; Discussion. *Am Water Works Assn J* 2:482-92 S '15
- Baltimore experience in paving street-railway tracks. H. D. Willmar, jr. *Il diags Eng N* 73:884-5 My 6 '15
- Comparative study of pavements based on Chicago conditions. *Eng & Contr* 48:432-3 My 12 '15
- Comparison of European and American pavements. *Eng & Contr* 48:432-3 My 12 '15
- Cost keeping system for work performed by municipal forces of the Philadelphia bureau of highways. *Eng & Contr* 48:292-4 Mr 31 '15; Same cond. *Eng Rec* 71:360-1 Mr 20 '15
- Current paving practice. *Munic J* 38:626 My 6 '15
- Discussion on paving. *Elec Ry J* 45:184-5 Ja 16 '15
- Engineering work preliminary to pavement construction. plans *Eng N* 74:460-1 S 2 '15
- Examination of Akron pavements. *Munic J* 37:954-5 D 31 '14
- Five years' satisfactory experience with a gravel and oil mixed pavement, Concord, Mass. J: M. Keyes. *Eng N* 73:83-4 Ja 14 '15
- General observations on street pavements of European cities. H: W. Durham. *Sch Mines Q* 36:68-78 N '14
- Highway work in New York. *Munic J* 39:689-90 N 4 '15
- Iron sides for roads. *Il Sci Am* 112:254 Mr 13 '15
- Manhattan pavements limited to three standard types. H. W. Durham. *Eng Rec* 71:202-3 F 13 '15
- One cause of the inferiority of city pavements in America. L. S. Smith. *Good Roads n* 9: 109 Mr 6 '15
- Pavement problems and experience in San Francisco. J: M. Owens. *Il Eng N* 72:1180-2 D 10 '14
- Pavement problems; contrasts of foreign and American practice. H: W. Durham. *Eng N* 72:1182-3 D 10 '14
- Pavements dished in the center. E. McCullough. *Eng Rec* 71:691 My 29 '15
- Paving a leading factor in city betterment; abstracts of papers by C. D. Pollock and others. *Eng Rec* 72:475-6 O 16 '15
- Paving for piers, warehouses and garages. plan *Eng N* 73:952-4 My 13 '15
- Paving methods in Baltimore, Maryland. H. D. Willmar, jr. *Il Eng & Contr* 42:344-6 O 7 '14
- Paving of streets. H. J. Fixmer. *Assn Eng Soc J* 55:19-31 JI '15
- Paving procedure in American cities. *Eng & Contr* 42:569 D 16 '14
- Philadelphia highway work; use of granite block in street railway tracks and wood block near schools and hospitals. *Il Munic J* 38:619-22 My 6 '15
- Practice in paving street-railway tracks. *Il diags Eng N* 73:883 My 6 '15
- Proper rolling of plastic pavements. E: Wright. *Good Roads n* 10:248 N 6 '15
- Road and pavement dimensions—widths, depths and crown; with discussion. L. White. *Good Roads n* 9:8-14 Ja 2 '15
- Road and street work in the city of Panama. H: W. Durham. *Il Good Roads n* 10:144-6 S 4 '15
- San Francisco, the exposition city. *Il Good Roads n* 10:133-9 S 4 '15
- Selection of paving material. G: W. Tillson. *Munic J* 38:3-7 Ja 7 '15; Same abr. (Relative values of paving materials). *Eng & Contr* 42:442-4 N 4 '14
- Standard practice in the construction of block pavements. *Good Roads n* 10:78 Ag 7 '15
- Street pavements. C. Hill. *Good Roads n* 10: 205-6 O 2 '15
- Street pavements, roads and boulevards. A. J. Cleary. *Il Eng N* 73:311-13 F 18 '15
- Street paving in Lynn, Mass. H: T. Rich. *Il Munic J* 38:383-4 Mr 4 '15
- Street paving in small cities. T: H. MacDonald. *Good Roads n* 9:73-5 F 6 '15; Excerpts. *Munic J* 37:960 D 31 '14
- Street paving units. *Munic J* 38:132 F 4 '15
- Traffic census and its bearing on the selector of pavements. W. W. Crosby. *Good Roads n* 10:265-6 N 6 '15
- Traffic limits of various types of pavements. W. D. Washington. *Eng & Contr* 42:403-4 O 28 '14
- Trenton's 1914 paving work. H. F. Harris. *Il Munic J* 38:279-80 Mr 4 '15
- Use of patented pavements by cities. *Eng N* 73:507 Mr 11 '15; Same. *Sci Am* 112:323+ A1 2 '15

**Pavements—Continued**

Value of paving materials disclosed by two years' service test in New York. H. W. Durham. Eng Rec 71:203-4 F 13 '15

See also Asphalt; Bridges—Floors; Concrete; Curbs; Gutters; Paving machinery; Roads; Roads, Macadamized; Sidewalks; Street openings; Streets

**Cost**

Asphalt paving in Columbia; determination of cost by force account. J. McNeal. II Munic J 39:539-41 O 7 '15

Asphaltic and bitulithic pavements. R. S. Dulin; R. G. McMullen. Assn Eng Soc J 55: 67-79 S '15; Abstract. Am Soc M E J 37:657 N '15; Discussion. Assn Eng Soc J 55:79-94 S '15

Construction details and costs. Munic J 38: 133-5; tables 144-52, 188-9 F 4-11 '15

Cost of asphaltic concrete pavement with small portable mixer. diag Eng N 73:1037-8 My 27 '15

Cost of brick pavements. V. M. Pierce and C. H. Moorefield. Eng & Contr 44:132-3 Ag 18 '15

Cost of construction and repair of pavements in Philadelphia in 1913; tables. W. H. Connell. Eng & Contr 44:361 O 14 '14

Cost of paving with asphaltic concrete on old macadam. Eng & Contr 44:369 N 10 '15

Costs of brick pavement and of concrete base at Gary, Ind. W. P. Cottingham. Eng & Contr 44:38-9 Ag 4 '15

Experience in paving by day labor at Duluth. Minn. J. Wilson. Eng & Contr 43:445 My 19 '15

Paving by day labor receives trial in Duluth. Eng Rec 71:333-4 Mr 13 '15

Relative 20-year economy of various types of roads and pavements. R. Trauttschold. Eng & Contr 44:89-91 Ag 4 '15

Statistics on paving in cities of the United States; tabulation. Good Roads n s 10:21-40 Jl 3 '15

See also Pavements—Maintenance and repair; Pavements, Concrete—Cost

**Crowns**

Diagram for determining pavement crowns. C. W. Barber. Eng N 74:509-10 S 9 '15

Pavement widths and crowns. H. J. Fixmer. diag Good Roads n s 9:230-1 Je 5 '15; Correction. 10:16 Jl 8 '15

Paving crown best distribution by hyperbolic curve. C. R. Mandigo. Eng Rec 72:549-50 O 30 '15

**Cutting**

Pavement rooter drawn by street cars tears up brick streets. II Eng Rec 72:117 Jl 24 '15

Tearing up pavement at 500 ft. per minute. II Elec Ry J 46:73 Jl 10 '15

**Expansion joints**

Expansion joints in granite-block pavements. II Eng N 74:398-9 Ag 26 '15

Lugs or spacers to prevent expansion failures in wood-block pavements. F. W. Cherrington. Eng N 73:376-6 F 11 '15

1915 practice of prominent builders of concrete roads. Concrete Cem 7:39 Jl '15

Perishable dividing plate for expansion joints in concrete. Munic Eng 43:324-+ My '15

Road joint protector. II Concrete Cem 7:193 N '15

Wood-block expansion joint for concrete alloy pavements. diag Eng Rec 70:702 D 26 '14

**Experiments**

See Pavements, Experimental

**Failures**

Surface warnings of street subsurface failures. R. Klotz. Eng N 74:831 O 28 '15

**Fillers**

Bituminous filler for granite block in Brooklyn. H. H. Schmidt. Eng Rec 71:297-8 Mr 6 '15

Joint fillers for granite block pavements. C. D. Pollock. Munic J 39:777-8 N 18 '15; Excerpts. Good Roads n s 10:264 N 6 '15; Excerpts. Eng Rec 72:475 O 16 '15

Pavements with pitch filler. II Munic J 38: 160-2 F 4 '15

**Foundations**

Adaptability and cost of concrete and macadam pavement bases in Oakland, California. W. H. Frickstad. Eng & Contr 42: 461 N 11 '14

Brick monolithic construction of county highways. R. L. Bell. II Eng & Contr 44:263-70 O 6 '15; Same cond. (Illinois finds new mortar bed an improvement) Eng Rec 72:453-4 O 9 '15

Brick road built monolithic at Paris, Ill. W. T. Blackburn. II Eng Rec 72:54-5 Jl 10 '15

Brick road construction upon a sand base in Hillsborough county, Florida. II Eng & Contr 44:333-6 O 27 '15

Cement-sand bed best for wood-block paving. C. R. Mandigo. Eng Rec 71:647-8 My 22 '15

Cracking of brick pavements is prevented by a mortar cushion. M. Schuyler. Eng Rec 72: 175-6 Ag 7 '15

Cushions for brick pavements. W. C. Perkins. Munic J 39:856-6 O 28 '15; Same. Eng & Contr 44:336 O 27 '15

Dry sand and cement mixture vs. mortar bed for wood block pavements. T. S. Oxholm. Eng N 73:217 F 4 '15; Same. Munic J 38: 777 Je 3 '15

Mortar beds for brick and stone pavements. Eng N 74:163. 273, 517-19 Jl 22, Ag 5, S 9 '15

Ohio uses cement-sand support for brick pavement. D. Moomaw. Eng Rec 72:455 O 9 '15

Pavement foundations over filled-in trenches. G. H. Fenkell; C. R. Mandigo. diag Eng N 74:228 Jl 29 '15

Rigid bed eliminates noise and subsurface pockets. F. A. Churchill. Eng Rec 72:455-6 O 9 '15

Road foundations. J. A. Johnston. Eng Rec 70:663-4 D 19 '14

Sand-cement and mortar beds for paving—a difference. S. Whinery. Eng N 74:995 N 18 '15

Sand versus motor beds for brick pavements. W. P. Blair. Eng N 74:903 N 4 '15

Thin concrete base, reinforced, for pavements. C. S. Pope; J. I. Tucker. Eng Rec 72:174-5 Ag 7 '15

Thin concrete base, reinforced, may save 50 cents a square yard in paving costs. J. S. Tucker. Eng Rec 71:719-20 Je 5 '15

Vitrified brick construction—streets and roads. W. C. Perkins. Eng Rec 72:476 O 16 '15

**Laws and regulations**

Ordinances regulating street excavating—replacement by city. Munic Eng 48:116-18 F '15

Practice relating to patented pavements in American municipalities. M. T. Calef. Eng & Contr 44:103-8 Ag 11 '15

Regulating street excavations; digest of ordinances of eight cities. A. L. Bostwick. Munic J 38:231-2 Mr 4 '15

**Maintenance and repair**

Cost of pavement maintenance in Oakland, Cal. Munic J 39:4-5 Jl 1 '15

Economic limit of pavement repairs. G. E. Norton. Eng & Contr 43:277-8 Mr 24 '15; Same. Munic J 39:1-3 Jl 1 '15

Economics of pavement repairing. G. H. Norton. Eng & Contr 44:187-8 S 1 '15

Legality of the Chicago wheel tax. Eng & Contr 43:438-9 My 19 '15

Repairing and resurfacing bituminous pavements. S. H. Lea. II Eng N 72:1308-10; 73: 258-9 D 31 '14, F 11 '15

Street repair in Cleveland, Ohio; with cost tables. P. J. Masterson and others. II Munic Eng 49:174-8 N '15

See also Pavements, Asphalt—Maintenance and repair; Pavements, Concrete—Maintenance and repair

**Patents**

Canadian bitulithic patents adjudged valid by the supreme court of Alberta. Good Roads n s 9:166-8 Ap 10 '15

Canadian bitulithic patents sustained. Munic Eng 48:277-8 Ap '15

**Pavements—Patents—Continued**

- Hassam Bi-co-mac pavement. *Il* Good Roads n s 10:271-2 N 6 '15  
 How shall patented materials or processes on public works be handled? G: C. Warren; S. Whinery. *Eng Rec* 72:511-12 O 23 '15  
 Practice relating to patented pavements in American municipalities. M. T. Calef. *Eng & Contr* 44:108-8 Ag 11 '15  
 State should deal directly with patentees of processes and materials in public work. S. Whinery. *Eng Rec* 72:73-4 J1 17 '15  
 Use of patented articles: court decisions in the several states as to conditions under which cities may contract for patented pavements and other articles. J. Simpson. *Munic J* 38:13-15 Ja 7 '15

**Repair****See Pavements—Maintenance and repair****Specifications**

- Closed, open or alternate paving specifications? D. T. Pierce. *Munic Eng* 48:300-1 My '15  
 Illinois specifications for concrete and brick pavements. *Munic Eng* 48:309-10 My '15

**Statistics**

- Paving statistics of American cities. *Munic J* 38:133-59 F 4 '15  
 Statistics of pavement construction in 1914 in United States and Canada. *Eng & Contr* 43: sup38-49 Ap 7 '15  
 Statistics on paving in cities of the United States; tabulation. *Good Roads* n s 10:21-54 J1 3 '15  
 Street and sidewalk improvement in the United States and Canada. *Munic Eng* 48:313-58 Je '15  
 Street pavements, 1915. *Munic Eng* 48:252-6 Ap '15

**Surface treatment**

- Maintaining macadam streets in Kansas City. C. R. Mandigo. *Eng Rec* 70:611-2 D 12 '14  
 Methods and cost of laying asphaltic wearing surface on concrete pavement, Santa Barbara county, California. W. C. Howe. *Il Eng & Contr* 44:131-3 Ag 18 '15  
 Methods and cost of resurfacing asphalt pavements in Brooklyn by the surface heater method. J. C. Huseman. *Il Eng & Contr* 42: 483-5 N 18 '14  
 Resurfacing old macadam with bituminous concrete in Chicago. *Il diag Eng & Contr* 42:857-8 O 14 '14

*See also* Pavements, Bituminous; Roads, Bituminous; Roads, Oiled

**Terminology****See Roads—Terminology****Testing**

- Smoothness-testing machine for pavements. *Il Eng N* 74:751-2 O 14 '15  
 Tests of smoothness made on various pavements. R. D. Kneale. *Eng N* 74:784 O 21 '15  
**Pavements, Asphalt**  
 Analyses of asphaltic concrete and asphalt block laid in Washington, D. C. in 1914. *Eng & Contr* 43:43 Ja 13 '15  
 Anchor block for asphalt block pavements. G: P. Hemstreet. *diag Eng & Contr* 43:503 Je 2 '15  
 Asphalt and wood fiber pavement. C: C. Brown. *Il Munic J* 38:766-7 Je 3 '15  
 Asphalt paving in Columbia; determination of cost by force account. J: McNeal. *Il Munic J* 39:539-41 O 7 '15  
 Asphalt surfaced concrete in California. *Munic J* 38:284-5 Mr 4 '15  
 Binder course in asphalt pavements. R. Klotz. *Eng N* 74:3-4 J1 1 '15  
 Camden's municipal asphalt plant. *Il Munic J* 38:137-8 F 4 '15  
 Evolution of the asphalt pavement in Toronto. G: Powell. *Good Roads* n s 9:185 My 1 '15  
 Kansas City, Mo., maintains open asphalt specifications. C. R. Mandigo. *Il Eng N* 74: 642-4 S 30 '15  
 New York city experience with asphalt block pavements. E. J. Morrison. *Eng N* 73:645-6

New York city experience with asphalt-block pavements. H: W. Durham. *Il Eng N* 73:521 Mr 13 '15

- Paving in Salt Lake City: rock asphalt from California and Utah, both limestone and sandstone; sheet asphalt using gilsonite. *Munic J* 37:958 D 31 '14  
 Poor sand the cause of the rapid disintegration of a sheet-asphalt pavement. W. M. Cross. *Eng N* 73:621 Ap 1 '15  
 Rock asphalt pavements in Salt Lake City, Utah. *Il Eng & Contr* 42:460-1 N 11 '14  
 Sheet asphalt for Florida roads. G: L. Watson. *Il Munic J* 39:503-6 S 30 '15  
 Theory of the perfect sheet asphalt surface. C. Richardson. *J Ind & Eng Chem* 7:463-5 Je '15  
 Thin asphalt block pavement for New York state highways. L. Grossman. *Il Eng Rec* 70:630-1 D 12 '14  
 Wood fiber and asphalt as paving materials. *Il Munic Eng* 48:292-3 My '15  
*See also* Pavements, Bituminous; Pavements, Bituminous concrete

**Maintenance and repair**

- Asphalt repaving in Manhattan. *Il Munic J* 39:687-9 N 4 '15  
 Asphalt repairs in small municipalities. W. H. Taylor, Jr. *Il Munic Eng* 49:171-3 N '15  
 Cost of asphalt repairs in Pittsburgh. J: B. Townley. *Munic Eng* 48:300 My '15  
 Economical asphalt relaying with hot mixer. *Il Elec Ry J* 45:1080-1 Ja 5 '15  
 Maintenance and repair of asphalt block pavements. E. J. Morrison. *Il Eng N* 74:352-5 Ag 19 '15  
 Methods and cost of resurfacing asphalt pavements in Brooklyn by the surface heater method. J. C. Huseman. *Il Eng & Contr* 42: 483-5 N 18 '14  
 One-course method reduces asphalt patching costs 15 per cent. F. N. Bingham. *Eng Rec* 72:208 Ag 14 '15  
 Portable mixer uses old asphalt for pavement patches. *Il Eng Rec* 71:746 Je 12 '15  
 Repairing asphalt pavements without a plant. F. N. Bingham. *Il Eng N* 74:314-15 Ag 13 '15  
 Repairing sheet asphalt with home-made plant, Norfolk, Va. W. H. Taylor, Jr. *Eng & Contr* 44:351-2 N 3 '15  
 Resurfacing asphalt pavements in San Francisco, Calif. J. Owens. *Il Eng N* 73:74 Ja 14 '15  
**Pavements, Bitulithic**  
 Bitulithic pavement and Warrenite roadway. G. H. Perkins. *Il Boston Soc C E J* 1:119-31 Mr '14  
 Canadian bitulithic patents adjudged valid by the supreme court of Alberta. *Good Roads* n s 9:156-8 Ap 10 '15  
 Canadian bitulithic patents sustained. *Munic Eng* 48:277-8 Ap '15  
 Organization and work of a national paving company. *Il Eng N* 73:712-16 Ap 15 '15  
 Resurfacing macadam streets with bitulithic. *Il Munic Eng* 49:88 Ag '15  
 Resurfacing old macadam roads with Warrenite. *Il map Good Roads* n s 8:222-6 D 5 '14  
**Pavements, Bituminous**  
 Asphaltic and bitulithic pavements. R. S. Dulin; R. G. McMullen. *Assn Eng Soc J* 55: 67-79 S '15; Abstract. *Am Soc M E J* 37:657 N '15; Discussion. *Assn Eng Soc J* 55:79-94 S '15  
 Bituminous construction and maintenance; with discussion. W: D. Uhler. *Good Roads* n s 9:64-7 F 6 '15; Abstract. *Eng Rec* 70:661 D 19 '14  
 Cementing value of bituminous binders L. Kirschbraun. *Il diag J Ind & Eng Chem* 6:976-85 D '14; Same. *Eng & Contr* 43:39-41 Ja 13 '15  
 Colloidal bituminous pavement. *Il Munic J* 38 307-8 Ja 10 '15  
 Effect of leaking illuminating gas on bituminous pavements. H. C. Jones. *Am Gas Ligh J* 102:25 Ja 11 '15  
 Effect of leaking illuminating gas on bituminous pavements. G: C. Warren. *Eng & Contr* 42:405 O 28 '14; Excerpts. *Eng N* 73 441 Mr 4 '15

**Pavements, Bituminous—Continued**

- Laying a new bituminous pavement at West Pittston, Pa. *Il* Munic J 39:153-5 Ag 5 '15  
 Maintaining macadam streets in Kansas City. C. R. Mandigo. Eng Rec 70:641-2 D 12 '14  
 New Jersey road experiences. Munic J 39:5-6 J1 1 '15  
 Repairing and resurfacing bituminous pavements. S. H. Lea. *Il* Eng N 72:1308-10; 73:258-9 D 31 '14, F 11 '15  
 Specification and selection of asphaltic materials for street pavement. F. O. X. McLaughlin. Sch Mines Q 36:30-9 N '14  
 Types of bituminous construction. F. P. Smith. Munic Eng 49:168-70 N '15; Same. Munic J 39:652-5 O 28 '15  
*See also* Pavements, Asphalt; Pavements, Bitulithic; Roads, Bituminous

**Pavements, Bituminous concrete**

- Adapting an old racetrack to automobile racing. *Il* Eng N 74:603-4 S 23 '15  
 Bituminous concrete pavement construction in Washington. D. C. M. Brooke. *Il* Eng & Contr 43:325-6 Ap 7 '15  
 Cost of asphaltic concrete pavement with small portable mixer. diag Eng N 73:1037-8 My 27 '15  
 Cost of paving with asphaltic concrete on old macadam. Eng & Contr 44:369 N 10 '15  
 English specifications for a bituminous concrete mixing plant and details of the acceptance test. W. H. Grieves. Eng & Contr 42:325-6 S 30 '14  
 Methods and cost of removing an asphaltic macadam road surface, reworking the old material and relaying it as asphaltic concrete. G. C. Dillman. *Il* diag Eng & Contr 42:532-3 D 9 '14  
 Methods and mixtures used in constructing tar concrete pavements. P. P. Sharples. *Il* Eng & Contr 43:256-8 Mr 17 '15  
 Stone-filled asphalt surface or fine asphalt concrete. C. Richardson. Eng Rec 70:634 D 12 '14  
 Topeka pavement in Queens borough, New York, after two and one-half years. F. A. Reimer. *Il* Good Roads n s 9:240-8 Je 12 '15  
 What is asphaltic concrete? Munic J 38:697-8 My 20 '15

**Pavements, Brick**

- Bituminous paving brick. *Il* Good Roads n s 10:162 S 4 '15  
 Brick pavement design. W. D. P. Warren. Eng & Contr 44:2-4 J1 7 '15  
 Brick pavement experience in Toronto, Ont. *Il* Eng N 73:168-9 Ja 28 '15  
 Brick pavement lasted 24 yr.; new pavement also brick. Jackson, Mich. H. K. Higgins. *Il* Eng N 74:543 O 28 '15  
 Brick pavement on old macadam base. E. S. Smith. *Il* Munic Eng 48:312 My '15  
 Brick paving in King county, Washington. *Il* Good Roads n s 10:3-4 J1 3 '15  
 Brick paving lessons learned in over-coming faults of original designs, Greenville, Texas. A. D. Duck. *Il* Eng & Contr 44:382-4 N 17 '15  
 Brick paving on steep grades: recent practice in Toronto, Ont. F. A. Churchill. *Il* Munic Eng 48:105-8 F '15  
 Brick roads and streets. J. Laylin. Munic Eng 48:10-15 Ja '15; Same, with discussion. Good Roads n s 9:55-60 F 6 '15  
 Cost of brick pavements. V. M. Pierce and C. H. Moorefield. Eng & Contr 44:132-3 Ag 13 '15  
 Costs of brick pavement and of concrete base at Gary, Ind. W. P. Cottingham. Eng & Contr 44:88-9 Ag 4 '15  
 Costs of monolithic brick road construction. R. L. Bell. Eng & Contr 44:369 N 10 '15  
 Cracking of brick pavements is prevented by a mortar cushion. M. Schuyler. Eng Rec 72:175-6 Ag 7 '15  
 Cushions for brick pavements. W. C. Perkins. Munic J 39:655-6 O 28 '15; Same. Eng & Contr 44:336 O 27 '15  
 Economical paving with 8-in. brick. Eng N 73:223 F 4 '15  
 Examples of long-lived pavements. *Il* Good Roads n s 10:81-2 Ag 7 '15  
 GROUT filler in brick paving. F. A. Churchill. Concrete Cem 6:94-5 F '15

- How to apply filler to vertical fiber brick pavement. Munic Eng 48:115-16 F '15  
 Kansas City tries thin brick with sand-asphalt surface. C. R. Mandigo. Eng Rec 71:546-7 My 1 '15  
 Methods and costs of grouting brick pavements. diags Eng & Contr 44:302-4 O 20 '15  
 Mortar cushion in Houston eliminates pavement maintenance. W. M. Archibald. *Il* Elec Ry J 46:1045 N 20 '15  
 Omit transverse joints in brick pavements. Eng Rec 72:206 Ag 14 '15  
 Paving work in Meadville, Pa. B. F. Miller, Jr. Munic J 37:804 D 3 '14  
 Rattler test for paving brick abandoned in St. Louis. M. Schuyler. Eng Rec 72:200-1 Ag 14 '15  
 Repairing brick pavements after street excavations. P. J. Masterson. Eng N 73:997 My 20 '15; Same. Good Roads n s 9:190 My 1 '15; Munic Eng 48:308-9 My '15; Munic J 38:628-9 My 6 '15  
 Sand versus mortar beds for brick pavements. W. P. Blair. Eng N 74:903 N 4 '15  
 Study of brick pavement construction. W. P. Blair. Good Roads n s 10:264-5 N 6 '15  
 Subdrainage of brick-paved streets, Lakewood, Ohio. E. A. Fisher. diags Eng N 74:557-8 S 16 '15  
 Surfacing bridges. F. R. Lander. *Il* Munic Eng 49:50-1 Ag '15  
 Thin concrete base for brick pavement. J. L. Harrison. Eng & Contr 44:91-3 Ag 4 '15  
 Vertical fiber brick paving. J. I. Tucker. Munic Eng 49:114-16 S '15  
 Vitriified brick construction—streets and roads. W. C. Perkins. Eng Rec 72:476 O 16 '15  
 Vitriified-brick pavement on an old macadam base, Carlisle, Penn. J. C. Hiteshew. *Il* diag Eng N 72:1262-3 D 24 '14

*See also* Roads, Brick

**Pavements, Care of**

- Protecting newly paved streets at Baltimore. Eng N 73:55 Ja 14 '15

**Pavements, Concrete**

- A. S. M. I. concrete pavement specifications. Good Roads n s 10:287 N 6 '15  
 Concrete alley paving in Chicago. S. E. Bates. *Il* Munic Eng 49:147-8 O '15  
 Concrete alley paving with wood block joints in Baltimore. Concrete Cem 7:42 J1 '15  
 Concrete curb and gutter as constructed in Denver, Colo. E. E. Van de Greyn. *Il* Munic Eng 48:16-18 Ja '15  
 Concrete for paving. G. W. Pickels. *Il* Munic Eng 48:55-2 Ja '15  
 Concrete pavement damaged by a fire. C. C. Wiley. Eng N 73:936-7 My 13 '15  
 Concrete pavement design. W. D. P. Warren. Eng & Contr 48:570-1 D 16 '14; Same. Munic Eng 48:52-5 Ja '15  
 Concrete pavement in the track allowance. H. C. Campbell. *Il* Elec Ry J 48:998-1000 N 13 '15  
 Concrete pavements of Sioux City, Iowa. T. H. Johnson. *Il* Eng N 73:1110-12 Je 10 '15  
 Concrete pavements with dished surfaces: substitution of center for side-gutters. *Il* Eng Rec 71:555 My 1 '15  
 Concrete paving on Walnut street, Macon, Georgia. C. H. Fuller. *Il* Good Roads n s 9:94-5 Mr 6 '15  
 Costs reduced by monolithic curb, gutter and pavement. *Il* diags Eng Rec 71:111 Ja 23 '15  
 Crushed limestone aggregate for concrete pavements. A. M. Wolf. Eng N 74:903 N 4 '15  
 Design and construction of a concrete pavement in the village of Glencoe, Ill. *Il* diags Eng & Contr 42:393-4 O 21 '14  
 Details of a reinforced concrete pavement in Morgan Park, Ill. *Il* diags Eng & Contr 42:212-13 Ag 26 '14  
 Dividing plate of perishable material for expansion joints in concrete. *Il* Munic J 39:201 Ag 5 '15  
 Eliminating concrete road joints. H. B. Bilger. Eng Rec 71:198 F 13 '15  
 Five years' experience with concrete pavements at Fredonia, Kansas. *Il* Eng Rec 71:530-1 Ap 24 '15

**Pavements, Concrete—Continued**

- How to prevent the reflection of light and heat from concrete pavements. *Il* Munic Eng 48:373-4 Je '15
- Installation of Kahn armor plates. *Il* diags Munic Eng 49:37-9 JI '15
- Kinks in concrete road and pavement construction. C. D. Franks. *Il* diags Eng & Contr 43:114-18 F 10 '15
- Method of determining spacing of joints in concrete pavements or roads. H. J. Fixmer. Eng & Contr 43:407 My 5 '15
- Method of striking off wide concrete street pavements and those having a varying crown. H. C. Campbell. diags Eng & Contr 44:69-70 JI 28 '15
- Methods and costs of concrete pavement construction at Des Plaines, Illinois. M. P. Taylor. Eng & Contr 43:444-5 My 19 '15
- Proportioning concrete; how Aberdeen secures use by contractors of proper amounts of cement and aggregate. L. D. Kelsey. Munic J 38:427 Ap 1 '15; Same. Munic Eng 48:275 Ap '15; Same. Concrete Cem 7:144 O '15
- Wood-block expansion joint for concrete alley pavements. diag Eng Rec 70:702 D 26 '14
- See also Curbs, Concrete; Pavements, Bituminous concrete; Roads, Concrete

**Cost**

- Average cost of concrete pavements laid in 1914. Eng N 73:941-2 My 13 '15
- Cost of concrete pavements. C. H. Moorefield and J. T. Voshell. Eng & Contr 44:148 Ag 25 '15
- Cost of construction and maintenance of concrete roads. H. J. Kuelling. Concrete Cem 6:114-15 Mr '15
- Methods and costs of concreting for modern pavement. S. Gausmann. Elec Ry J 45:718-19 Ap 10 '15; Same. Eng Rec 71:451, 534 Ap 10, 24 '15

**Maintenance and repair**

- Practical hints on proper methods of maintenance for concrete pavements. W: M. Kinney. *Il* Eng Rec 70:633-4 D 12 '14
- Renovating a worn-out concrete pavement. *Il* diag Eng N 73:172 Ja 28 '15

**Pavements, Experimental**

- Experimental paving in Cleveland. M. B. Greenough. Munic Eng 49:184 N '15
- Experiments with wood paving blocks; eight years' test of seven species of wood and different angles of courses, conducted by U. S. forest service and city of Minneapolis. C. H. Teesdale. diag Munic J 38:623-8 My 6 '15
- Test results will form basis for selecting pavements in St. Louis. N. Cunliff. *Il* Eng Rec 72:545-6 O 30 '15

**Pavements, Granite**

- Bituminous filler for granite block in Brooklyn. H. H. Schmidt. Eng Rec 71:297-8 Mr 6 '15
- Durax pavement in Louisville. D. R. Lyman. *Il* Munic J 39:78 JI 15 '15
- Durax paving in Louisville, Kentucky. *Il* Good Roads n s 10:188 O 2 '15
- Expansion joints in granite-block pavement. *Il* Eng N 74:398-9 Ag 26 '15
- Granite-block crushing-test abandoned. Eng N 74:809 O 21 '15
- Granite block pavements. Eng N 73:403-4 F 25 '15
- Granite block repaving in Worcester. C. D. Pollock. *Il* Munic J 39:541-3 O 7 '15
- Joint fillers for granite block pavements. C. D. Pollock. Munic J 39:777-8 N 13 '15; Excerpts. Good Roads n s 10:284 N 6 '15; Excerpts. Eng Rec 72:475 O 16 '15
- Manufacture of granite paving blocks. *Il* Eng N 73:378-81 F 25 '15
- Methods and costs of grouting granite block pavement. Eng & Contr 44:350-1 N 3 '15
- Mortar cushions for granite-block pavements. S. Whinery. Eng N 74:420 Ag 26 '15
- Napped or recut granite paving in Baltimore; abstracts. R. M. Cooksey. Eng Rec 72:475 O 16 '15; Munic J 39:583-4 O 14 '15; Good Roads n s 10:267 N 6 '15
- Pavements grouted at one application without separation of sand. D. Moomaw. Eng Rec 79:551-2 O 30 '15

- Paving with redressed granite at Albany, N. Y. *Il* Munic J 37:802-4 D 3 '14
- Perfect condition of fourteen-year-old granite block paving. *Il* Eng & Contr 44:192 S 8 '15
- Recent practice in construction in wood and granite block. W: A. Howell. Good Roads n s 9:98-100 Mr 6 '15
- Recut granite block pavements. W: A. Howell. Munic Eng 47:487-70 D '14; Same. Eng & Contr 42:358-60 O 14 '14
- Redressed granite-block pavements. *Il* Eng N 73:1020-3 My 27 '15
- Relaying street railway tracks in an old granite block pavement in Worcester, Mass. *Il* Good Roads n s 10:140 S 4 '15
- Service tests of stone block pavements in Brooklyn. H. H. Schmidt. Eng & Contr 43: 153-9 F 17 '15
- Small granite block pavement. *Il* Munic J 37: 799-800 D 3 '14
- Small granite blocks laid on cement-sand cushion. *Il* Eng Rec 72:329-30 S 11 '15
- Track renewal discloses perfect condition of 14-year-old granite pavement in Worcester, Mass. *Il* Eng Rec 72:229-30 Ag 21 '15

**Pavements, Stone**

- Pavements with pitch filler. *Il* Munic J 38: 160-2 F 4 '15

**See also Pavements, Granite****Pavements, Tar concrete. See Pavements, Bituminous concrete****Pavements, Wood**

- American wood preservers' association; discussion. Elec Ry J 45:181-2 Ja 23 '15
- Bleeding and swelling of paving blocks. C. H. Teesdale. Eng & Contr 44:191 S 8 '15
- Broad street wood block pavement, Newark, N. J. Eng N 73:153 Ja 28 '15
- Cement-sand bed best for wood-block paving. C. R. Mandigo. Eng Rec 71:647-8 My 22 '15
- Creosoted wood-block paving practice in St. Paul, Minn. plan Eng N 73:579 My 6 '15
- Douglas fir for paving blocks. O. F. M. Goss. Eng N 74:774-8 O 21 '15
- Dry sand and cement mixture vs. mortar bed for wood block pavements. T. S. Oxholm. Eng N 73:217 F 4 '15; Same. Munic J 38: 777 Je 3 '15
- Experiences in creosoted wood block paving. H. R. Dutton. Good Roads n s 10:266-7 N 6 '15; Abstract. Eng Rec 72:475-6 O 16 '15
- Experiments with wood paving blocks; eight years' test of seven species of wood and different angles of courses, conducted by U. S. forest service and city of Minneapolis. C. H. Teesdale. diag Munic J 38:623-6 My 6 '15
- Laying creosoted wood-block on 5 per cent grades. J. R. West. *Il* Eng N 74:924-5 N 11 '15
- Lugs or spacers to prevent expansion failures in wood-block pavements. F. W. Cherrington. Eng N 73:275-6 F 11 '15
- Pavement troubles along car tracks eliminated. Eng Rec 71:116 Ju 23 '15
- Paving problems of Queensboro bridge, New York. *Il* Eng N 74:396-7 Ag 26 '15
- Popularity of wood-block paving in Great Britain. Sci Am 113:449 N 20 '15
- Recent practice in construction in wood and granite block; with discussion. W: A. Howell. Good Roads n s 9:96-8, 100 Mr 6 '15
- Test pavement of creosoted blocks at Kansas City. Eng Rec 71:86 Ja 16 '15
- Tests vs. inspection of treatment of creosoted wood paving blocks. F. W. Cherrington. Munic Eng 48:120-1 F '15
- Treated wood block pavement in the United States. Eng & Contr 43:365-7 Ap 21 '15
- Treated wood block pavements. *Il* Munic Eng 48:84-100 F '15
- Use of wood block paving in the United Kingdom. Good Roads n s 10:234 O 23 '15
- Value of the absorption test for wood blocks. G: W. Tillson. Good Roads n s 9:191 My 1 '15; Same. Munic J 38:776-7 Je '15
- Wood block and granite for bridge floors. E: A. Byrne. *Il* diags Munic Eng 48:337-9 Je '15
- Wood block pavement after 6 years' service. *Il* Eng Rec 71:153 Ja 9 '15
- Wood block pavement in the City of Wenatchee, Wash. F: J. Sharkey. *Il* Eng & Contr 44:300-2 O 20 '15

**Pavements, Wood—Continued**

- Wood block pavement without cushion layer of sand. *Il Eng Rec* 71:52-3 Ja 9 '15  
 Wood block paving in Peoria, Illinois. L. D. Jeffries. *Good Roads* n s 9:146 Ap 3 '15

**Paving. See Pavements**

- Paving brick manufacturers, Institute of. See Institute of paving brick manufacturers

**Paving machinery**

- Steam melting paving plant. *Il Munic J* 37:814 D 3 '14  
 Wonder paver. *Il Munic J* 39:450 S 16 '15

**Payrolls**

- Field and office methods employed by Louisville water co. in checking construction gang payrolls. G. D. Crain, jr. *Eng & Contr* 43:102-3 F 3 '15

**Peace**

- Organized efforts to bring about peace. F. W. Kelsey. *Sci Am* 111:491 D 12 '14  
 Plan for international peace. E. W. Sells. *J Account* 19:85-96 F '15

**Pearl fisheries**

- Pearl fisheries of Ceylon. R. I. Geare. *Il Sci Am* S 79:4-5 Ja 2 '15

**Pearl harbor, Oahu Island, Hawaiian Islands**

- Pearl harbor dry dock; abstract. H. R. Stanford. *Am Soc M E J* 37:413-14 Jl '15

- Pearl harbor drydock. F. R. Harris. *Eng Rec* 71:57-8 Ja 9 '15

- Plan for building Pearl harbor drydock near Honolulu. *Il Eng Rec* 71:32-4 Ja 16 '15; *Eng N* 73:86-9 Ja 14 '15

**Pearls**

- Artificial production of pearls. F. H. Chidester. *Il Sci Am* S 79:140 F 27 '15

**See also Pearl fisheries**

- Pearson, Fred Stark, 1861-1915  
 In memoriam. *por Gen Elec R* 18:866, 930-3 S '15

- Passing of a great engineer—Dr. F. S. Pearson. H. P. Quick. *Elec Ry J* 45:988-9 My 22 '15; Same. *Elec W* 65:1287-8 My 22 '15

- Sketch. Engineer 119:484-5 My 14 '15

**Peat**

- Coal substitutes; use of chalk fuel and peat proposed in England. *Sci Am* S 79:352 My 29 '15

- Evaporation tests with peat and peat coke as fuels. H. Winkelmann. *Am Soc M E J* 37:289 My '15

- Oils from peat; abstract. F. M. Perkin. *Am Soc M E J* 37:297-8 My '15

- Russia's power resources; extensive water falls and peat deposits await exploitation. maps *Eng M* 49:909-12 S '15

- Utilization of peat in Italy. *Am Gas Light J* 102:125 F 22 '15

**Peat distillation**

- Apparatus for distillation of peat; patent by E. Bartholomew. *diag Met & Chem Eng* 13:817 N 1 '15

- Peat-distillation process. *Elec R & W Elec'n* 67:994 N 27 '15

**Peking-Hankow railway**

- Railways in China. Engineer 119:181-2, 197 F 6, 26 '15

**Pellagra**

- Widening pellagra zone. *Sci Am* S 78:359 D 5 '14

**Penetrometer**

- Testing apparatus for various tests of road materials. *Il Munic J* 39:200 Ag 5 '15

**Pennants**

- Outgrowths of letterpress. G. Sherman. *Il Inland Prt* 55:177-82 My '15

**Pennsylvania****Bridges**

- Instructions to employees governing bridge work by Pennsylvania state highway department. *Eng & Contr* 43:32-3 Ja 13 '15

**Highway department**

- Organisation and standards of the Pennsylvania state highway department. *Il diags Eng & Contr* 42:186-93 Ag 19 '14

**Pennsylvania electric association**

- 8th annual convention, Bedford Springs, Pa., Sept. 7-10. *Elec R & W Elec'n* 67:524-8 S 18 '15

- 8th annual convention, Bedford Springs, Pa., Sept. 7-10. *Elec W* 66:661-2 S 18 '15

**Pennsylvania railroad**

- Annual report. *Ry Age* 58:394-6, 429-30 Mr 5 '15

- Electrification of the Pennsylvania at Philadelphia. *Il map Ry Age* 59:889-94 N 13 '15

- Electrification of the Pennsylvania railroad's suburban line at Philadelphia. *Il diags map Ry* 11 57:611-19 N 13 '15

- Fire fighting on the Pennsylvania system. *Ry R* 57:559 O 30 '15

- Norfolk & Western and Pennsylvania electrifications. G. Gibbs. *W Soc E J* 20:314-18 Ap '15

- Pennsylvania electrification at Philadelphia. *Il Elec R & W Elec'n* 67:923-8 N 30 '15

- Pennsylvania electrification at Philadelphia. *Il plan Elec W* 66:1074-6 N 13 '15

- Pennsylvania inaugurates electric service in Philadelphia. *Il diag Eng Rec* 72:590-3 N 13 '15

- Pennsylvania R. R. electrifies Philadelphia district. *Il map Eng N* 74:930-3 N 11 '15

- Pennsylvania railroad test department. C. D. Young. *Il plan Ry Age* (Mech ed) 89:332-7 Jl '15; Same. *Ry Age* 59:6-11 Jl 2 '15; Same. *Ry R* 57:2-5, 42-6, 117-18 Jl 3-10, 24 '15; Excerpts. *Metal Ind n s* 13:288-9 Jl '15

- Pennsylvania track elevation through Wilkesburg, Pa. *Il plans Ry Age* 59:654-8 O 8 '15

- Philadelphia-Paoli electrification. *Il diags Elec Ry J* 46:980-9 N 13 '15

- Power distribution on Pennsylvania R. R. at Philadelphia. *Il plan Power* 42:685-6 N 16 '15

- Underground cable on the Pennsylvania railroad. L. C. Forshee. *Il Ry Age* 59:269-71 Ag 13 '15

- Westinghouse electro-pneumatic air brake on the Pennsylvania railroad. H. T. Wade. *Il plan Sci Am* 112:594 Je 12 '15

**Pennsylvania state association of master plumbers**

- Annual convention, Wilkes-Barre, Pa., May 18. *Metal Work* 33:777-9 My 28 '15

- 21st annual convention, Wilkes-Barre, Pa., May 18-19. *Dom Eng* 71:254-7 My 29 '15

**Pennsylvania street railway association**

- Spring meeting; workmen's compensation, organized safety, small car operation and other topics discussed. *Elec Ry J* 45:935-6, 979-82 My 15-22 '15

- Winter meeting, Dec. 8-9, 1914; abstracts of the reports and papers. *Elec Ry J* 44:1293-9 D 12 '14

**Pennsylvania. University**

- Evans museum and dental institute, University of Pennsylvania, Philadelphia; designs and plans. Erickb 24:pl 46-9 Ap '15

- Two dental buildings: Evans museum and dental institute, University of Pennsylvania. H. D. Eberlein. *Il plans Arch Rec* 37:517-32 Je '15

**Pensions**

- Baltimore's pension system. *Elec Ry J* 45:172-3 Ja 23 '15

- Steel corporation pensions. *Iron Age* 95:268, 902 Ja 28, Ap 22 '15

**Penstocks. See Water pipes****Peoria, Illinois**

- Municipal steamboat landing at Peoria, Ill. *diags plan Eng N* 73:15 Ja 7 '15

- John C. Proctor recreation center

- John C. Proctor recreation center. *Il plans Arch Rec* 37:116-31 F '15

**Streets**

- Wood block paving in Peoria, Ill. L. D. Jeffries. *Good Roads* n s 9:146 Ap 3 '15

**Peptone**

- Comparative study of methods for the quantitative determination of sulfur in peptone. H. W. Redfield and C. Huckle. *Am Chem Soc J* 37:807-11 Mr '15



- Perceic oxide**  
Derivatives of perceic oxide. C. C. Meloche. *diag Am Chem Soc J* 37:2328-46 O '15
- Pere Marquette railroad**  
Abstract of annual report. map Ry Age 59: 931-2 N 19 '15  
Appraisal of the Pere Marquette lines in Michigan; abstract of a report to the railroad commission. M. E. Cooley. Ry Age 58: 376-7 F 26 '15  
Appraisal of the Pere Marquette R. R. Ry R 58:68-9 Ja 9 '15  
Appraisal report fills ten large boxes. *Il Eng Rec* 71:200-2 F 13 '15
- Perfumery**  
Contributions of the chemist to the perfumery and essential oil industry. E. T. Beiser. *J Ind & Eng Chem* 7:936-7 N '15  
Perfumery farming in the United States. *Sci Am* 112:213 Mr 6 '15
- Pergolas**  
Rustic pergola for the country home. *Il diags Bldg Age* 37:37 Je '15
- Periodic law**  
Results of recent investigations. S. Dushman. *Gen Elec R* 18:614-21 Ji '15
- Periodicals**  
Library files of periodicals. A. Fantl. *Eng N* 74:978 N 18 '15  
*See also Engineering periodicals; Newspapers*
- Periodides**  
Periodides of acid amides and their addition products with metallic salts; substances of exceptionally high molecular weight. F. J. Moore and R. M. Thomas. *Am Chem Soc J* 36:1928-37 S '14
- Periscope**  
Modern submarines in war and peace. S. Lake. *Int Marine Eng* 20:466 O '15  
Periscope, the searching eye of the submarine. *Il Sci Am* 112:96 Ja 30 '15  
Scissors periscope. *Il Sci Am* S 80:228 O 9 '15  
Submarine periscopes. E. Coustet. *Il diags Sci Am* S 80:269-70 O 23 '15; Abstract. *Eng M* 50: 110-11 O '15  
Various forms of the periscope. *diags Sci Am* S 79:322 My 22 '15
- Perishable freight association, American railway.** *See American railway perishable freight association*
- Perkin medal**  
Ninth Perkin medal; presentation to Edward Weston. *Eng & Min J* 99:234-5 Ja 30 '15  
Perkin medal award to Edward Weston. *J Ind & Eng Chem* 7:243-54 Mr '15  
Presentation of the Perkin medal to Edward Weston. *Met & Chem Eng* 13:111-16 F '15
- Permeameter**  
Koepsel permeameter. C. W. Burrows. *Il diags U S Bur Stand Bul* 11:101-30 N 15 '14; Abstract. *Elec W* 65:95-6 Ja 9 '15; Summary. *Sci Am* S 79:197 Mr 27 '15
- Permutized water**  
Value of permutized water for processing yarns. A. R. Calvo. *Textile World* 49:243-4 My '15
- Perry memorial**  
Reinforced-concrete cap of Perry memorial column. H. C. Baird. *diags Eng N* 74:154-5 Ji 22 '15
- Personal injuries**  
Liability of machinery manufacturers. A. L. H. Street. *Iron Age* 95:222-3 Ja 21 '15
- Personality**  
Actual instances of dual personalities. E. T. Rehert. *Sci Am* S 79:2-3, 25-7 Ja 2-9 '15
- Perspective**  
Elementary perspective drawing. G. W. Kittredge. *Il Bldg Age* 37:30-2 Ap; 31-3 My; 24-6 Je; 25-8 Ji; 24-6 Ag; 35-8 S; 32-4 O; 39-40 N '15
- Peru**  
Banking and credit in Argentina, Brazil, Chile, and Peru. E. N. Hurley. *U S Bur For & Dom Com* 90:1-72 '14
- Financial developments in South American countries. W. H. Lough. *U S Bur For & Dom Com* 103:35-8 '15  
*See also Architecture—Peru*
- Industries and resources**  
Casapalca district, Peru. *Eng & Min J* 99:355 F 20 '15  
Romanic story of vanadium. C. J. Stark. *Il Iron Tr R* 57:781-4 O 21 '15
- Petroleum**  
Analytical distillation of petroleum. W. F. Rittman and E. W. Dean. *diags J Ind & Eng Chem* 7:185-95, 754-60 Mr. S '15  
Burning oil well and the well that extinguished itself. *Sci Am* S 80:343 N 27 '15  
Burton process of cracking to make gasoline. C. H. Claudy. *Il Sci Am* 112:5-4 Ja 2 '15  
Capillary concentration of gas and oil. C. W. Washburne. *Am Inst Min E Bul* 93:2365-78 S '14; Discussion. 100:831-46 Ap '15  
Chlorides in oil-field waters. C. W. Washburne. *Am Inst Min E Bul* 87:375-81 Mr '14; Discussion. 90:1374-5; 100:825-30 Je '14, Ap '15  
Crude oil as a reducing agent. *Iron Tr R* 56: 525-6 Mr 11 '15  
Dehydrating oil plant of Nevada petroleum co., California. S. J. Hardison. *Il diags Am Inst Min E Bul* 99:537-44 Mr '15  
Dehydrating petroleum oil. *diags Met & Chem Eng* 13:570 S 1 '15  
Estimation of aromatic hydrocarbons in cracked petroleum. W. F. Rittman, T. J. Twomey and G. Egloff. *Met & Chem Eng* 13:682-6 O 1 '15  
Estimation of oil reserves. C. W. Washburne. *Am Inst Min E Bul* 98:469-71 F '15  
Fluorescence of petroleum distillates. B. T. Brooks and R. F. Bacon. *Sci Am* S 79:61 Ja 23 '15  
Gas and oil wells through coal seams; discussion. *Am Inst Min E Bul* 100:846-58 Ap '15  
Improvement of high boiling petroleum oils, and the manufacture of gasoline as a by-product therefrom, by the action of aluminum chloride. A. M. McAfee. *J Ind & Eng Chem* 7:737-41 S '15; Same. *Met & Chem Eng* 13:592-7 S 15 '15; Same abr. *Am Gas Light J* 103:293-5 N 8 '15; Abstract. *Eng N* 74:632 S 16 '15  
Increased gasoline yield and toluol from petroleum. *Am Gas Light J* 102:156-7 Mr 8 '15  
Innovations in petroleum technology. *Eng M* 49:111-12 Ap '15  
Iodine number of linseed and petroleum oils. W. H. Smith and J. B. Tuttle. *U S Bur Stand Tech Pa* 37:1-17 '14; Same. *J Ind & Eng Chem* 6:994-8 D '14  
Manufacture of gasoline by cracking heavy oils. *Sci Am* S 79:283 My 1 '15  
Motor fuels; "cracked" spirits. V. B. Lewes. *Am Gas Light J* 103:179-81 S 20 '15  
Oil, gas, and water content of Dakota sand in Canada and United States. L. G. Huntley. *Am Inst Min E Bul* 102:1333-53 Je '15; Discussion. 106:2428-30 D '15  
Oil in an igneous rock. J. A. Udden. *Econ Geol* 10:582-5 S '15  
Oils from peat; abstract. F. M. Perkin. *Am Soc M E J* 37:297-8 My '15  
Petroleum developments. J. D. Northrop. *Power* 41:245 F 16 '15  
Petroleum exhibit—San Francisco Panama-Pacific international exposition, February 20 to December 4, 1915. *J Ind & Eng Chem* 7:259-80 Mr '15  
Preparation of gasoline and kerosene from heavier hydrocarbons. B. T. Brooks and others. *diags J Ind & Eng Chem* 7:180-5 Mr '15  
Pressure distillation of petroleum hydrocarbons. A. F. Bjerrgaard. *Il diags J Ind & Eng Chem* 7:678-7 Ji '15  
Range of applicability of the liquid sulphur dioxide method for determining aromatic constituents in hydrocarbon mixtures. W. F. Rittman and R. J. Moore. *diag Met & Chem Eng* 13:718-14 O 15 '15

**Petroleum—Continued**

Relations among the physical constants of the petroleum distillates. W. F. Rittman and G. Egloff. *J Ind & Eng Chem* 7:578-82 J1 '15

Rittman process of cracking. C. H. Claudy. *il Sci Am* 112:267 Mr 20 '15

Rittman vaporizes petroleum in still. *diag Automobile* 32:555 Mr 25 '15

Role and fate of the connate water in oil and gas sands. R. H. Johnson. *Am Inst Min E Bul* 98:221-6 F '15; Discussion. 101:1157-62; 103:1449-59; 105:2057-60 My, J1, S '15

Temperature coefficient of expansion of petroleum residuums. E. Rossbacher. *diag J Ind & Eng Chem* 7:577-8 J1 '15

Test plant operated to deodorize oil refinery wastes. F. R. Hesser. *il diags Eng Rec* 72:541-2 O 30 '15

Thermal reactions of petroleum hydrocarbons in the vapor phase. W. F. Rittman. *J Ind & Eng Chem* 7:945-53 N '15

Topping plants of California. A. F. L. Bell. *il diags Am Inst Min E Bul* 105:1789-99 S '15; Discussion. 108:2428 D '15

Variations of the physical characteristics of a petroleum residuum with increasing percentages of grahamite. H. Rossbacher. *J Ind & Eng Chem* 7:208-8 Mr '15

See also Coal-tar products; Gas; Gas, Oil; Gasoline; Kerosene; Oil lands; Oil shales; Oil storage

**Bibliography**

Bibliography of the chemistry of gas manufacture. W. F. Rittman and M. C. Whitaker. *U S Bur Mines Tech Pa* 120:11-12 '15

**Cost**

Cost of maintaining production in California oil fields. M. E. Lombardi. *Am Inst Min E Bul* 105:2109-14 S '15; Discussion. 108:2427 D '15

**Laws and regulations**

Regulation of oil and gas wells in California. L. H. Eddy. *Eng & Min J* 100:383-4 S 4 '15

**Transportation**

See Petroleum pipe lines; Tank cars; Tank ships

**Well boring**

Comparative costs of rotary and standard drilling. M. L. Requa. *Am Inst Min E Bul* 98:217-19 F '15

Drilling for oil. *Sci Am S* 80:199 S 25 '15

Evolution of drilling rigs. R. B. Woodworth. *il diags Am Inst Min E Bul* 107:2247-312 N '15

Geologic conditions that may confuse oil drillers. D. Hager. *il Eng & Min J* 100:590 O 9 '15

Improved methods of deep drilling in the Coalinga oil field, California. M. E. Lombardi. *il diag Am Inst Min E Bul* 98:209-15 F '15

Protecting California oil fields from damage by infiltrating water. R. P. McLaughlin. *diag Am Inst Min E Bul* 108:2313-19; Discussion. 2413-19 D '15

**Alaska**

Petroleum fields of Alaska. A. H. Brooks. *maps Am Inst Min E Bul* 98:199-207 F '15

**Alberta**

Correlation and geological structure of the Alberta oil fields. D. E. Dowling. *map Am Inst Min E Bul* 102:1355-64 Je '15

**California**

California oil in 1914. M. L. Requa. *Eng & Min J* 99:139-40 Ja 16 '15

California petroleum production, first half of 1915. *Eng & Min J* 100:238 Ag 7 '15

Cost of maintaining production in California oil fields. M. E. Lombardi. *Am Inst Min E Bul* 105:2109-14 S '15; Discussion. 108:2427 D '15

Protecting California oil fields from damage by infiltrating water. R. P. McLaughlin. *diag Am Inst Min E Bul* 108:2313-19; Discussion. 2413-19 D '15

**Chile**

Petroleum prospects in Chile. *Sci Am S* 80:48 J1 17 '15

**Galicia**

Galician oil fields in war time. J. R. Falkowicz. *Eng & Min J* 99:590 Ap 17 '15

**Illinois**

Illinois oil in 1914. R. S. Blatchley. *Eng & Min J* 99:136-7 Ja 16 '15

**Kentucky**

Oil and gas possibilities of Kentucky. F. J. Fohs. *map Am Inst Min E Bul* 99:621-8 Mr '15

**Louisiana**

Petroleum in Texas and Louisiana. A. J. Hazlett. *Eng & Min J* 99:137-9 Ja 16 '15

**Mexico**

Furber oil field, Mexico. E. Degolyer. *il map Am Inst Min E Bul* 105:1899-1911 S '15

Mexican oil fields. L. G. Huntley. *il maps Am Inst Min E Bul* 105:2067-107 S '15

Occurrences of petroleum in eastern Mexico as contrasted with those in Texas and Louisiana. E. T. Dumble. *Am Inst Min E Bul* 104:1623-38 Ag '15; Discussion. 108:2434-5 D '15

Oil fields of Mexico. E. Ordoñez. *Am Inst Min E Bul* 94:2531-5 O '14; Discussion. 100:817-28 Ap '15

Oil region of northeastern Mexico. V. R. Garfias. *bibliog Econ Geol* 10:195-224 Ap '15

**Mississippi**

Probable oil pools in Mississippi. *Am Gas Light J* 103:183 S 20 '15

**Montana**

Probable oil and gas in Montana. J. P. Rowe. *Eng & Min J* 99:647-9 Ap 10 '15

**Oklahoma**

Influence of the Cushing pool in the oil industry. R. H. Johnson and L. G. Huntley. *Eng Soc W Pa* 31:460-72; Discussion. 31:472-87 J1 '15

Oil pools of southern Oklahoma and northern Texas. J. H. Gardner. *maps Econ Geol* 10:422-34 J1 '15

**Texas**

Occurrences of petroleum in eastern Mexico as contrasted with those in Texas and Louisiana. E. T. Dumble. *Am Inst Min E Bul* 104:1623-38 Ag '15

Oil pools of southern Oklahoma and northern Texas. J. H. Gardner. *maps Econ Geol* 10:422-34 J1 '15

Petroleum in Texas and Louisiana. A. J. Hazlett. *Eng & Min J* 99:137-9 Ja 16 '15

**United States**

Petroleum in the United States in 1914. *Eng & Min J* 99:59 Ja 9 '15

**Washington**

Possible occurrence of oil and gas fields in Washington. C. E. Weaver. *Am Inst Min E Bul* 103:1419-27 J1 '15; Discussion. 108:2431-3 D '15

**Petroleum, Synthetic**

Gasoline from synthetic crude oil. W. O. Snelling. *Am Inst Min E Bul* 100:695-704 Ap '15; Same. *Sci Am S* 79:189-91 Mr 20 '15; Same cond. *Sci Am* 112:266-7 Mr 20 '15; Abstract. *Met & Chem Eng* 13:180-1 Mr '15; Discussion. *Am Inst Min E Bul* 101:1163-9 My '15

Gasoline from synthetic oil. W. O. Snelling. *Eng & Min J* 99:379 F 20 '15; Same. *Am Gas Light J* 102:156 Mr 8 '15

**Petroleum as fuel**

Air and steam as atomizing agents. R. A. Bull. *diag Iron Tr R* 57:628-9 S 30 '15; Same. (Tests in atomizing fuel oil with steam and air). *Foundry* 43:424-7 O '15; Excerpts. *Iron Age* 96:1049-50 N 4 '15

Auxiliary steam plant of the Vancouver Island power company. H. W. Beecher. *il plans Elec R & W Elec'n* 67:378-8 Ag 28 '15

Comparative furnace efficiency. R. J. Weitlaner. *Met & Chem Eng* 13:367-61 Je '15

**Petroleum as fuel—Continued**

- Comparison of the economy of powdered coal, oil and water gas for heating furnaces. C. F. Herington. Eng N 72:1156-8 D 10 '14
- Crude oil as fuel in heating systems. H. S. Haley. diags Dom Eng 70:104-6, 139-41 Ja 23-30 '15
- Description of nut, bolt and rivet shop of Upson nut co. with details of arrangement and equipment. R. V. Sawhill. Iron Tr R 56:1249-51 Je 17 '15
- Difficulties accompanying the prevention of dense black smoke and its relation to the cost of fuel and locomotive repairs; report. Ry R 57:337-8 S 11 '15
- Fuel oil. Sci Am S 79:325 My 22 '15
- Fuel oil for locomotives. G. M. Bean. diags Ry R 56:752-6 Je 5 '15; Same cond. Power 41:900-1 Je 29 '15; Same cond. Ry Age (Mech ed) 89:280-1 Je '15; Same cond. Ry Age 58:1115-16 My 28 '15; Same cond. Sci Am 113:92 J1 '15
- Fuel oil in the navy. Sci Am S 79:218 Ap 3 '15
- Fuel oil installations on the Grand Trunk Pacific Ry. J. G. LeGrand. diags Ry R 56:828-31 Je 19 '15
- Fuel oil on railroads. Sci Am S 79:203 Mr 27 '15
- Largest oil-burning steamers. Sci Am 113:361 O 23 '15
- Lead smelting at El Paso. H. F. Elster. Am Inst Min E Bul 104:1493-1506 Ag '15; Excerpts. Eng & Min J 100:356-7 Ag 28 '15
- Liquid fuel for foundry cupolas. E. F. Cone. diags Iron Age 95:1058-9 My 13 '15
- Liquid fuel for melting. Iron Tr R 57:222-3 J1 29 '15
- Low-pressure oil-burning metallurgical furnaces. H. Met & Chem Eng 13:510-11 Ag '15
- Motor fuels; situation in England, and on the continent. V. B. Lewes. Am Gas Light J 103:165-7, 170-1, 179-81 S 20 '15
- Oil-burning stand-by plants. C. H. Delany. Power 42:172-5 Ag 3 '15; Abstract. Elec W 65:1514 Je 12 '15
- Oil firing in foundry practice. W. N. Best. Iron Age 95:870-1 Ap 15 '15
- Petroleum as fuel under boilers and in furnaces for heating, melting, and heat treatment of metals. W. N. Best. II diags Am Inst Min E Bul 104:1527-37 Ag '15; Discussion. 108:2420-2 D '15
- Possible savings with oil fuel. Old Scotch. Int Marine Eng 20:81 F '15
- Reverberatory smelting practice of Nevada consolidated copper co. Met & Chem Eng 13:681-2 O 1 '15
- Roasting and leaching concentrator slimes tailings. L. Addicks. Am Inst Min E Bul 104:1477-8 Ag '15; Same. Met & Chem Eng 13:533 S 1 '15
- Test of Mexican fuel oil. Ind Eng 15:29 Ja '15

*See also* Gas and oil engines

**Petroleum engines.** *See* Gas and oil engines

**Petroleum industry**

- Depreciation as applied to oil properties. P. W. Henry. Am Inst Min E Bul 97:23-30 Ja '15; Discussion. 101:1148-51 My '15
- Influence of the Cushing pool in the oil industry. R. H. Johnson and L. G. Huntley. Eng Soc W Pa 31:460-72; Discussion. 31:472-87 J1 '15
- 1914 oil product. Am Gas Light J 103:59 J1 26 '15
- Oil production a record breaker. Am Gas Light J 103:43-4 Ja 18 '15
- Sliding royalties for oil and gas wells. R. H. Johnson. Am Inst Min E Bul 102:1292-4 Je '15; Discussion. 108:2423-5 D '15
- World's production of petroleum in 1914. Am Gas Light J 103:123 Ag 23 '15

**Petroleum pipe lines**

- California oil pipe line, 200 miles long, built in record time of 15 months. II map Eng Rec 72:294-6 S 4 '15

- Pumping California crude oil. C. P. Bowie. II Eng N 74:1068-71 D 2 '15

**Pharmaceutical chemistry.** *See* Chemistry, Medical and pharmaceutical

**Pharmacy**

*See also* Drugs—Analysis

**Phase advancers**

- Action of phase advancer in regulating power-factor of an induction motor. diags Elec W 66:191 J1 24 '15
- Methods of testing the Scherbius compensator. A. A. Ahmed. Inst E E J 53:640-8 My 1 '15

**Phenacetin**

- Estimation of phenacetin and salol in admixture. W. O. Emery, G. C. Spencer and C. C. LeFebvre. J Ind & Eng Chem 7:631-4 Ag '15

**Phenol.** *See* Carboic acid

**Phenolates**

- Study of the reaction of alkali salts of sulfonic acids with alkali phenolates by dry distillation. E. H. Nollau and L. C. Daniels. Am Chem Soc J 86:1885-91 S '14

**Phenolquinolinein**

- Phenolquinolinein, a heterocyclic analog of phenolphthalein. A. W. Dox. Am Chem Soc J 37:1948-9 Ag '15

**Phenylcytosine**

- Researches on pyrimidines: synthesis of 4-phenylcytosine. T. B. Johnson and E. H. Hemingway. Am Chem Soc J 37:878-83 F '15

**Philadelphia, Pennsylvania**

- Comprehensive city planning in Philadelphia. B. A. Haldeman. II Am Inst Arch J 3:255-80 Je '15

**Architecture**

- Architectural reclamation of small areas in cities. H. D. Eberlein. II Arch Rec 37:1-26 Ja '15
- New building for the T-square club, Philadelphia, Pa. J. F. Harbeson. II plans Brickb 24:253-4 O '15
- Three types of Georgian architecture: the evolution of the style in Philadelphia. H. D. Eberlein. II diags Arch Rec 37:159-76 F '15

**Bridges**

- Better looking city railway bridges in Philadelphia. M. L. Cooke. Eng N 74:682 O 7 '15
- Street bridges in Philadelphia designed for permanent artistic effects. II diags Eng Rec 72:598-600 N 13 '15

**Bureau of highways**

- Cost keeping system for work performed by municipal forces of the Philadelphia bureau of highways. Eng & Contr 43:292-4 Mr 31 '15; Same cond. Eng Rec 71:360-1 Mr 20 '15
- Functions of the planning boards installed in the Bureau of highways and street cleaning. W. H. Connell. Eng & Contr 44:187 S 8 '15; Same. Good Roads n s 10:168 S 11 '15
- 1914 operations of the Philadelphia bureau of highways and street cleaning. II Good Roads n s 9:131-5 Ap 3 '15

- Organization, character of personnel, scope of work, and methods of operation and control of a large municipal highway department. W. H. Connell. II map J Fr Inst 179:439-69 Ap '15

**Electrical bureau**

- Signal box records. P. I. Patton. Munic J 39:897-8 S 9 '15

**Public works**

- Pertinent paragraphs from a real report. M. L. Cooke. II Eng M 50:445-9 D '15

**Railroads**

- Electrification of the Pennsylvania railroad's suburban line at Philadelphia. II diags map Ry R 57:611-19 N 13 '15
- Pennsylvania R. R. electrifies Philadelphia district. II map Eng N 74:980-3 N 11 '15
- Philadelphia-Paoli electrification. II diags Elec Ry J 46:980-3 N 13 '15
- \$24,000,000 South Philadelphia railroad improvement now well under way. II map Eng Rec 72:327-9 S 11 '15

**Rapid transit**

- City of Philadelphia starts rapid-transit work. H. H. Quimby. Eng N 74:572-3 S 16 '15
- Second Philadelphia report issued. Elec Ry J 46:663 O 2 '15

## Philadelphia, Pennsylvania—Continued

## Sewerage

- Collection and treatment of sewage. G. S. Webster. Boston Soc C E J 1:277-89 My '14  
Collection and treatment of sewage in Philadelphia. Eng & Contr 42:208-7 Ag 26 '14  
Final report on Philadelphia's plan of sewage treatment. Eng Rec 71:688 My 22 '15  
Philadelphia sewage treatment report. Munic J 38:840-2 Je 17 '15  
Philadelphia's sewerage report; editorial comment. Munic J 39:257-9 Ag 19 '15  
Sewerage developments at Philadelphia. Eng & Contr 43:sup20 My 26 '15

## Streets

- Dust suppression and street cleaning. W. H. Connell. Good Roads n s 10:249-52 N 6 '15; Same abr. Eng & Contr 44:233-43 S 29 '15  
Philadelphia highway work; use of granite block in street railway tracks and wood block near schools and hospitals. Il Munic J 38:619-22 My 6 '15  
Road and boulevard construction in Philadelphia. Il map Munic Eng 48:248-8 Ap '15  
Rules and regulations governing street traffic in Philadelphia. Il diags Eng & Contr 42:321-4 S 30 '14

See also Philadelphia—Bureau of highways

## Water supply

- New sedimentation basin will halve costs of sand cleaning at Philadelphia filters. F. D. West. diags Eng Rec 71:591-3 My 8 '15  
Philadelphia water-filter operations in 1914. Eng N 73:576-7 Mr 25 '15  
Philadelphia water-works handicap: 1804-1914. J. C. Trautwine, Jr. Eng N 73:900-1 My 6 '15  
Philadelphia water-works in 1914. Eng N 73:506 Mr 11 '15  
Results of task work without bonus in cleaning filter sand at Philadelphia. S. E. Thompson. Eng Rec 70:808-9 D 5 '14; Same. Eng & Contr 43:579-81 D 23 '14; Same cond., with discussion. Am Soc M E J 37:102-4 F '15; Same cond. (Efficiency study of filter cleaning) Munic J 38:253-4 F 25 '15

## Wharves

- Philadelphia's Southwark piers completed. Il diags plans Eng Rec 72:478-80 O 16 '15  
Shipping piers in Southwark district of Philadelphia. Il diags plans Eng N 74:421-4 Ag 26 '15

## Philippine Islands

## Commerce

- Philippine markets for American lumber. F. H. Smith. U S Bur For & Dom Com 100:1-16 '15

## Industries and resources

- Gold dredging in the Philippines. Il Eng & Min J 99:685-8 Ap 17 '15  
Philippine forest wealth. D. C. Worcester. Il Am For 21:1-13 Ja '15  
Rattan supply of the Philippines. J. R. Arnold. U S Bur For & Dom Com 95:1-40 '15

## Law

- United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1053-67 '15

## Public works

- Philippine road built at high level to escape flood damage. Il map Eng Rec 72:264-6 Ag 28 '15

## Phonetics

- Visible speech; eye seeing and the rule measuring the difference between sounds. A. L. Kroeber. Il diags Sci Am 112:471 My 22 '15

## Phonograph

- Electrically operated phonograph. Il diag Elec W 65:1480 Je 5 '15  
Microscopic study of the phonograph. J. B. Taylor. Il Sci Am 112:428-9+ N 13 '15  
Phonograph diaphragm operating on magnetic principles and adaptable to telephone circuits. Il diag Elec W 66:1161 N 20 '15  
Phonograph shop. See Edison phonograph shop  
Phonology. See Phonetics

## Phoneopticon

- Mechanical eye bringing sight to the blind. L. E. Todd. Il Sci Am 113:188+ Ag 14 '15  
Phoneoptikon and the optophone. E. E. Fournier d'Albe. Sci Am 113:467 N 27 '15

## Phosphate lands

- United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1050-3 '15

## Phosphates

- Formation of tri-calcium phosphate on mixing ground limestone with acid phosphate. R. N. Brackett and B. Freeman. J Ind & Eng Chem 7:620 Jl '15  
Newly discovered phosphate deposit in Tennessee. H. V. Maxwell. Eng & Min J 99:1110-11 Je 26 '15  
Phosphate rock as furnace flux. J. A. Barr. Il Iron Tr R 56:183-5 Ja 21 '15  
Phosphate rock industry of Florida. L. W. Tucker. Il Boston Soc C E J 1:509-22 D '14  
Phosphates of 2,3-diestearin. R. R. Renshaw and R. R. Stevens. Am Chem Soc J 36:1770-2 Ag '14  
Report of the committee of American chemical society on research and analytical methods—phosphate rock. J Ind & Eng Chem 7:446-8 My '15

Phosphor-bronze. See Bronze

## Phosphorescence

- Experiments on the nature of the photogenic processes in the lampyridae. F. A. McDermott. Am Chem Soc J 37:401-4 F '15  
Experiments on the nature of the photogenic substance in the firefly. E. N. Harvey. diags Am Chem Soc J 37:396-401 F '15  
Production of light by animals. U. Dahlgren. Il J Fr Inst 180:518-37, 711-27 N-D '15 (to be cont)

## Phosphoric acid

- Comparison of a few methods for total phosphoric acid in superphosphate. C. A. Peters. J Ind & Eng Chem 7:39-40 Ja '15  
Factor to be used for the calculation of the phosphoric acid in Neumann's method. S. L. Jodidi. Am Chem Soc J 37:1708-10 Jl '15  
Factor to be used for the calculation of the phosphoric acid in Neumann's method. S. L. Jodidi and E. H. Kellogg. J Fr Inst 180:349-67 S '15  
Strength of nitric acid, period of extraction, and ignition as affecting the gravimetric determination of phosphoric acid in soils. O. L. Brauer. J Ind & Eng Chem 6:1004-5 D '14

## Phosphorus

- Analoid method for the determination of phosphorus in steel, iron and slag. Met & Chem Eng 13:191-2 Mr '15  
Colorimetric determination of phosphorus in soil extracts. C. E. Millar and F. A. Gangler. J Ind & Eng Chem 7:619 Jl '15  
Estimation of uranium and phosphorus. H. D. Newton and J. L. Hughes. Am Chem Soc J 37:1711-15 Jl '15  
Factor to be used for the calculation of the phosphoric acid in Neumann's method. S. L. Jodidi. Am Chem Soc J 37:1708-10 Jl '15  
How to detect phosphorus in steel. W. T. Stead. Il Iron Tr R 57:989-90 N 18 '15  
Nephelometric estimation of phosphorus. P. A. Kober and G. Elgerer. Am Chem Soc J 37:2373-81 O '15  
Phosphorus in malleable castings. E. Touceda. Il Iron Tr R 57:634-6 S 30 '15; Same. Foundry 43:446-9 N '15; Same cond. Iron Age 96:924-6 O 21 '15  
Precipitation of phosphorus as ammonium phosphomolybdate in the presence of sulfuric acid. K. G. Falk and K. Sugita. Am Chem Soc J 37:1507-15 Je '15  
Phosphorus pentachloride  
Densities and degrees of dissociation of the saturated vapor of phosphorus pentachloride. A. Smith and R. H. Lombard. diags Am Chem Soc J 37:2055-62 S '15

## Photochemistry

- Features of photo-chemistry. H. H. McHenry. Sci Am S 79:27 Ja 9 '15  
See also Photographic chemistry

**Photo-electric cells**

Potassium photo-electric cells; a study of the relationship of illumination and current. H. E. Ives. *diags Sci Am S 80:348-50, 362-3 N 27-D 4 '15*

Zero method with photo-electric cells; abstract. F. K. Richtmyer. *plan Elec W 66: 262 JI 81 '15*

**Photo-electricity**

Photoelectric relay. J. Kunz. *diag Elec W 66: 934 O 23 '15*

Photo-electricity; the intimate relations of light and electricity. J. A. Fleming. *Sci Am S 80:6-7, 18-19 JI 3-10 '15*

**Photoengraving**

Development and recent advances of the technographic arts. L. E. Levy. *II J Fr Inst 180:387-408 O '15*

Standardization of the trimming of blocks for engravings. F. W. Gage. *II Inland Ptr 55: 246-9 My '15*

**Cost**

Increase in prices for engravings. *Inland Ptr 55:769-70 S '15*

**Photogenic process.** See **Phosphorescence****Photographic chemistry**

Contributions of the chemist to the photographic industry. F. C. Frary. *J Ind & Eng Chem 7:888-9 N '15*

Evolution of the modern dry plate; its history, chemistry and manufacture. E. P. Wrightman. *Sci Am S 80:126-7 Ag 21 '15*

Hydrogen potentials of sodium hydroxide solutions and the dissociation constant of water. F. C. Frary and A. H. Nietz. *Am Chem Soc J 37:2268-8 O '15*

Hydrolysis of sodium carbonate in solution. F. C. Frary and A. H. Nietz. *Am Chem Soc J 37:2268-73 O '15*

Reaction between alkalies and metal and hydroquinon in photographic developers. F. C. Frary and A. H. Nietz. *Am Chem Soc J 37:2273-9 O '15*

Reducing power of photographic developers as measured by their single potentials. F. C. Frary and A. H. Nietz. *diags Am Chem Soc J 37:2246-63 O '15*

Removal of photographic developing and fixing agents from films and prints. C. A. Brautlecht. *J Ind & Eng Chem 7:899 O '15*

**Photographic paper**

Diffusing media; the optical properties of photographic papers. *Illum Eng Soc 10:388-93 no 5 '15*

Japanese tissue as a photographic paper. *Sci Am 113:299 O 2 '15*

Photographic paper to be made in America. *Sci Am 113:248 S 18 '15*

**Photographs**

Nine photographs by Ben J. Lubschez. *Am Inst Arch J 3:380a-380h S '15*

**Photography**

Application of the new high-efficiency tungsten lamp to photography; with discussion. M. Luckiesh. *II Illum Eng Soc 10:149-80 no 2 '15*

Artificial illuminants for use in practical photography. C. E. K. Mees. *J Fr Inst 180: 481-2 O '15*

Development and recent advances of the technographic arts. L. E. Levy. *II J Fr Inst 180:387-408 O '15*

Evolution of the modern dry plate; its history, chemistry and manufacture. E. P. Wrightman. *Sci Am S 80:126-7 Ag 21 '15*

Gas-filled lamp in photography. *Elec W 65: 1154-5 My 8 '15*

How to make carbon positives. C. C. Kiplinger. *Sci Am 112:289 Mr 27 '15*

Invention and development of photography; from the daguerrotype to the moving picture. *II Sci Am 112:530-4 Je 5 '15*

Making good photographs. *Sci Am S 80:266-7 O 23 '15*

Nitrogen-filled tungsten lamp for photographic purposes; abstract. W. Voegel. *Elec W 65: 1116-17 My 1 '15*

Physics of the photographic process. C. E. K. Mees. *diags J Fr Inst 179:141-60 F '15; Abstract. Met & Chem Eng 13:923 D 1 '15*

Possibilities in technical photography. F. Hennius. *Eng Soc W Pa 30:991-1002 Ja '15*

Recent advances in photography. H. Leffmann. *II J Fr Inst 178:748-9 D '14; Same. Sci Am S 79:44-6 Ja 16 '15*

Relative photographic and visual efficiencies of illuminants. L. A. Jones, M. B. Hodgson and K. Huse. *J Fr Inst 180:484-7 O '15*

See also Blue prints; Cameras; Chronophotography; Color photography; Moving pictures; Photographic paper; Photographs; Photokaleidograph; Photomicrography; Phototelegraphy; Radiography; Stereoscopic views; Telephotography

**Reproduction of plans, drawings, etc.**

Camera vs. the pantograph. H. A. Williamson. *diags Colliery 35:288-91 Ja '15; Excerpt. Eng M 48:901-3 Mr '15*

How tracings are reproduced for the federal evaluation. *Eng Rec 71:675 My 29 '15*

Machine reproduces, develops and prints all in itself. *II Eng Rec 72:32 JI 3 '15*

New reproducing machine of the Commercial camera co. *II Iron Tr R 56:1106-7 Je 3 '15*

Photographing on both sides of a sheet. *II Iron Age 95:1122-3 My 20 '15*

Photostat and its use. L. D. Burlingame. *II Mach 21:961-4 Ag '15*

Portland, Ore., bureau of photography. H. M. White. *II Munic J 39:577-8 O 14 '15*

**Photography, Aerial**

Military rocket camera. *II Sci Am 112:126 F 6 '15*

Photographic maps; methods of producing correct charts with the camera. Kappel. *II diags Sci Am S 80:200-1 S 25 '15*

**Photography, Bureaus of.** See **Portland, Ore.—Bureau of photography****Photography, Color.** See **Color photography****Photography, Military**

Military air scouting by motion pictures. E. A. Dench. *Sci Am 112:156 F 13 '15*

Military rocket camera. *II Sci Am 112:126 F 6 '15*

**See also Photography of projectiles****Photography, Submarine**

Submarine photographic apparatus. *II Elec W 65:1330-1 My 22 '15*

Submarine photography. *II Int Marine Eng 20:327 JI '15*

Submarine photography. J. E. Williamson. *II Illum Eng Soc 10:403-4 no 5 '15*

Submarine photography by aid of quartz lamps. *II Elec R & W Elec'n 66:1000 My 29 '15*

**Photography in Industry****See also Photography—Reproduction of plans, drawings, etc.****Photography of projectiles**

Photographing projectiles. C. Cranz, P. A. Günther, and F. Kulp. *II Sci Am S 79:204-5, 220-1 Mr 27-Apr 3 '15*

**Photography of sound**

Photographing speech; some recent investigations by Dr. Marage. J. Boyer. *II Sci Am 112:607-8 Je 19 '15*

**Photokaleidograph**

Apparatus for the production of kaleidoscopic pictures. *II Sci Am S 79:12-13 Ja 2 '15*

Photo-kaleidograph. *II Sci Am 112:103 Ja 30 '15*

**Photometric analysis.** See **Nephelometry (photometric analysis)****Photometry**

Approximate uniform photometric point-source. A. E. Kennelly, R. W. Chadbourn and G. D. Edwards. *diags Illum Eng Soc 10: 126-33 no 1 '15*

Calculation of illumination; description of method developed to overcome the difficulties encountered with indirect or semi-direct light sources. E. C. Powell. *Elec W 65:1463-4 Je 5 '15*

Characteristic equations of tungsten filament lamps and their application in heterochromatic photometry. G. W. Middlekauff and J. F. Skogland. *U S Bur Stand Bul 11:483-534 My 27 '15; Abstract. J Fr Inst 179:97-9 Ja '15; Excerpt. Illum Eng Soc 9:784-68; Discussion. 9:769-74 no 8 '14*

**Photometry—Continued**

- Choice of a group of observers for heterochromatic measurements. H. E. Ives and E. F. Kingsbury. *Illum Eng Soc* 10:208-8 no 3 '15
- Establishment of photometry on a physical basis. H. E. Ives. bibliog *il diag* J Fr Inst 180:409-36 O '15
- Experiments with colored absorbing solutions for use in heterochromatic photometry; with discussion. H. E. Ives and E. F. Kingsbury. *diags Illum Eng Soc* 9:795-813 no 8 '14; 10:253-8 no 3 '15
- Flicker photometer attachment for the Lummer-Brodhun contrast photometer. E. F. Kingsbury. *il diag* J Fr Inst 180:215-23 Ag '15; Same. *Am Gas Light J* 103:119, 122-3 Ag 23 '15
- Home-made portable equipment for photometer tests. *il Elec W* 66:873 O 16 '15
- Integrating sphere and arc lamp photometry; with discussion. N. K. Chaney and E. L. Clark. *Illum Eng Soc* 10:1-37 no 1 '15
- Integrating sphere equipped for testing gas-filled lamps. *il diag Elec W* 65:120 Ja 9 '15
- Light filters for use in photometry; with discussion. C. E. K. Mees. *Illum Eng Soc* 9:990-7 no 9 '14
- Method of correcting abnormal color vision and its application to the flicker photometer. H. E. Ives and E. F. Kingsbury. *Illum Eng Soc* 10:259-70 no 3 '15
- Methods of expressing brightness. J. R. Cravath. *Elec W* 64:1167-8 D 12 '14
- New form of flicker photometer. *Illum Engr* 8:462 N '15
- New illumination photometer. C. S. Redding. *il diag Elec W* 65:85-6 Ja 9 '15; *Elec R & W Elec'n* 66:220-1 Ja 30 '15
- New illuminometer. *Elec W* 65:74 Ja 9 '15
- New standard light source. L. A. Jones. *Am Gas Light J* 101:261-3 O 19 '14; Same. *Illum Eng Soc* 9:716-27; Discussion. 9:728-33 no 8 '14
- Optical properties of diffusing media. *Illum Eng Soc* 10:366-78 no 5 '15
- Ornamental street-lighting systems compared. H. E. Mahan and H. E. Butler. *il diag* *Elec W* 66:180-2 JI 24 '15
- Photometric units. P. G. Nutting. *Elec W* 65:332-3, 645 F 6, Mr 13 '15
- Photometry of gas-filled incandescent lamps; with discussion. C. H. Sharp. *il Illum Eng Soc* 9:1021-32 no 9 '14
- Photometry of gas-filled lamps. D. H. Tuck. *diags Elec W* 65:78 Ja 9 '15
- Photometry of incandescent lamps. J. W. Roper. *diags Am Gas Light J* 102:178-9 Mr 22 '15
- Photometry of lights of different colors; abstract. I. G. Priest. *Elec W* 66:185 JI 24 '15
- Photometry of the gas-filled lamp. G. W. Middlekauff and J. F. Skogland. *Elec W* 64:1248-51 D 26 '14
- Physical photometer in theory and practice. W. W. Coblentz. *diags J Fr Inst* 180:335-48 S '15
- Physical photometry. H. E. Ives. *diags Illum Eng Soc* 10:101-25 no 1 '15
- Physical photometry with a thermopile artificial eye; abstract. H. E. Ives and E. F. Kingsbury. *diag Elec W* 66:1100-1 N 13 '15
- Potassium photo-electric cells; a study of the relationship of illumination and current. H. E. Ives. *diags Sci Am S* 80:348-50, 362-3 N 27-D 4 '15
- Practical rating of electric incandescent lamps; with discussion. F. W. Willcox. *diags Illum Engr* 8:163-85 Ap '15
- Progress in photometry; committee report. *Illum Eng Soc* 10:550-6 no 7 '15; Same cond. *Am Gas Light J* 103:278 N 1 '15
- Proposals relative to definitions, standards and photometric methods. H. E. Ives. bibliog *Illum Eng Soc* 10:315-19 no 4 '15
- Proposed unit of brightness. *Elec W* 65:715 Mr 20 '15
- Rapid illuminometer exhibited before Chicago section. I. E. S. *diag Elec W* 65:170-1 Ja 16 '15
- Transmission and reflection photometer for small areas. P. G. Nutting and L. A. Jones. plan *Illum Eng Soc* 9:611-13 no 7 '14
- Unit of brightness. H. E. Ives. *Elec W* 65:460 F 20 '15
- Year's progress in illuminating engineering. *Illum Engr* 8:45-7 F '15
- Zero method with photo-electric cells; abstract. F. K. Richtmyer. plan *Elec W* 66:252 JI 31 '15

**Photomicrography**

- Equipment for sand photomicrography. *il Eng N* 74:240 JI 29 '15
- Improved apparatus for photomicrography of metals. *il Met & Chem Eng* 13:928-9 D 1 '15
- Mechanical features of the hydration of Portland cement and the making of concrete as revealed by microscopic study. N. C. Johnson. *il Am Soc M E J* 37:518-25; Discussion. 37:525-8 S '15
- Microscope opens new field in study of concrete. N. C. Johnson. *il Eng Rec* 71:98-102, 160-4, 191-7, 263-5, 301-3, 320-4 Ja 23, F 6-13, 27-Mr 13 '15
- Portraying the little things of nature. E. F. Bigelow. *il Sci Am* 113:360 O 23 '15
- Shells from European battlefields. *il Iron Age* 96:186-7 JI 22 '15
- Use of light filters with the tassin metallographic apparatus. F. H. Getman. *il diag J Ind & Eng Chem* 7:431 My '15

**Photostat**

- New reproducing machine. *il Iron Tr R* 56:1106-7 Je 3 '15
- Photostat and its use. L. D. Burlingame. *il Mach* 21:951-4 Ag '15

**Phototelegraphy**

- Electric transmission of pictures; abstract. J. Blondin. *diag Elec W* 65:479 F 20 '15
- Electrolytic luminosity for phototelegraphic receiver. L. H. Walter. *diag Elec W* 66:139 JI 17 '15
- Facsimile telegraphy and phototelegraphy. *Sci Am* 112:571-4 Je 5 '15
- Photographing speech; some recent investigations by Dr. Marage. J. Boyer. *il Sci Am* 112:607-8 Je 19 '15
- Telephotographic apparatus of Georges Rignoux. R. Arapu. *diag Sci Am S* 79:331 My 22 '15

See also Telephotography

**Phototherapy**

- Artificial light treatment of surgical tuberculosis. *Sci Am S* 80:175-6 S 11 '15
- Uses of light in the treatment of disease. E. C. Titus. *Illum Eng Soc* 10:135-42 no 2 '15; Same. *Sci Am S* 79:255 Ap 17 '15; Discussion. *Illum Eng Soc* 10:142-8 no 2 '15

See also Radiotherapy

**Phrenology**

- Relation of phrenology to the study of character. *Sci Am S* 80:354-5 D 4 '15

**Physical examinations**

- Chicago Elevated medical methods. H. E. Fisher. *il Elec Ry J* 45:1192-5 Je 26 '15
- Efficient human machine. *Sci Am* 113:334 O 16 '15
- Examining the physique of Chicago Elevated employees. H. E. Fisher. *il Elec Ry J* 46:216-19 Ag 7 '15
- How to keep your men healthy. S. C. Coey. *Iron Tr R* 56:389-90 F 13 '15
- Periodic physical examination of employees. E. L. Fisk. *Am Ind* 15:21-3 F; 22-3 Je '15
- Personal biologic examinations. G. M. Gould. *Sci Am S* 79:146-7 Mr 6 '15
- Physical control of employees. *Eng & Min J* 100:759 N 6 '15
- Physical examinations of section foremen. W. E. Schott. *Ry Age* 57:1147 D 13 '14
- Physician in industry; how the science of preventive medicine is minimizing accidents. S. M. McCurdy. *Iron Age* 95:401 F 13 '15; Same. *Sci Am S* 79:265 Ap 24 '15

**Physical geography**

See also Caves; Earth; Geology; Geysers

**Physical laboratories**

- British national physical laboratory; abstract of annual report, electrical standards division. *Elec W* 66:187-8 JI 24 '15
- British national physical laboratory; program of research work for 1915-16. *Met & Chem Eng* 13:870-1 N 15 '15

**Physical laboratories—Continued**

Metallurgical work at the National physical laboratory 1914-1915. *Met & Chem Eng* 13: 583-5 S 15 '15

National physical laboratory: abstract of annual report. *Engineer* 119:523-4 Je 25 '15

See also Electric laboratories

**Physical measurements**

Limits of experimental investigation. *Sci Am* S 80:83 Ag 7 '15

Measuring one twenty-millionth of an inch. *E. Kell. II plan Sci Am* 112:363-4 Ap 17 '15

**Physics**

Advances in general physics. *Sci Am* S 80: 130 Ag 28 '15

Physics of the photographic process. C. E. K. Mees. *diags J Str Inst* 178:141-60 F '15; Abstract. *Met & Chem Eng* 13:923 D 1 '15

See also Air; Atoms; Capillarity; Chemistry, Physical; Compressibility; Dynamics; Evaporation; Fluids; Forge and energy; Gases; Hydraulics; Light; Liquid air; Magnetism; Mechanics; Radiation; Radioactivity; Steam; Temperature, High; Thermodynamics; Thermometers; Units

**Physiological apparatus**

Instrumental study of the heart. *II Sci Am* 112:630-1+ Je 26 '15

**Physiological laboratories**

Scientist and the athlete; the physiological laboratory of the French military school at Joinville. J. Boyer. *II Sci Am* S 79:292 My 8 '15

**Piano player records**

Machine for making player-piano rolls at home. *II Sci Am* 113:431 N 13 '15

**Piano playing**

Device for the simultaneous playing of violin and piano. *II Sci Am* 113:471 N 27 '15

**Picketing**

Washington's new anti-picketing law. *Iron Tr R* 57:915 N 4 '15

**Pickling (metals)**

Effects of pickling upon the corrosion of iron. E. A. Richardson. *Met & Chem Eng* 12:759 D '14; Same. *Iron Age* 95:621 Mr 18 '15

Meata pickling machines. *II Metal Ind* n s 13: 387 S '15

Removing iron scale by pickling; theory vs. practice. C. Hering. *Met & Chem Eng* 13: 785-6 N 1 '15

**Picric acid**

Explosion of picric acid. A. Cooper-Key. *Engineer* 119:155 F 12 '15

Synthetic phenol and picric acid. A. H. Ney. *Met & Chem Eng* 13:686-90 O 1 '15; Same. *Sci Am* S 80:346-7 N 27 '15

**Pictures**

See also Moving pictures

**Piece work**

Freight car repairs under a piece work system. J. J. Tolin. *Ry Age (Mech ed)* 89:347-8 Ji '15

Master blacksmiths' convention; discussion of piece work. *Ry Age (Mech ed)* 89:473 S '15

Modern piece work system for a large plating department. C. H. Fleischer. *Metal Ind* n s 13:325-6 Ag '15

Modern plating practice: a piecework system as used by the National cash register company. W. Fraire. *II Metal Ind* n s 13:1-4 Ja '15

Piece rate system for wages in cotton mills. O. Elsas. *Textile World* 49:213-17 My '15

Piece work and bonus systems in the boiler shop. N. H. Ahlstruoh. *Ry Age (Mech ed)* 89:340-2 My '15

Piece work and its advantages. E. J. Thill. *Ry Age (Mech ed)* 89:122 Mr '15

Piece work for the paint shop. H. Heffelfinger. *Ry Age (Mech ed)* 89:526 O '15

Railway storekeepers' association; committee report. *Ry Age* 58:1043 My 21 '15

Special applications of the piece work system. H. F. Seward. *J Account* 20:122-3 Ag '15

**Piers**

Canadian Pacific terminal improvements at Vancouver. *II plan Ry Age* 58:614-16 Mr 19 '15

Connecticut shipping terminal at New London. W. E. Clarke. *II diags Eng N* 74:1028-32 N 25 '15

Covered slip and pier with gantry cranes for handling lumber. *diags Eng N* 74:494-5 S 9 '15

Crib-and-concrete guide pier at the Black Rock ship lock. *II diag Eng N* 73:541-2 Mr 18 '15

Design features of the Commonwealth pier no. 1, East Boston, Mass. *diags Eng & Contr* 42:170-2 Ag 19 '14

Freight handling at Havana, Cuba. *II Int Marine Eng* 30:116-18 Mr '15

Life of port structures. F. P. Whitham. *Eng N* 74:839 O 28 '15

New deep water pier at Halifax, Nova Scotia. A. F. Dyer. *II Concrete Cem* 7:7-13 Ji '15; Same cond. *Eng N* 73:1304-10 Je 24 '15

New York's new piers. *II diags Engineer* 120: 193-5, 204 Ag 27 '15

Ninth street pier in Lake Erie at Cleveland, Ohio. *II diags Eng N* 74:258-80 Ag 5 '15

Notable step in the building of New York's great piers. R. G. Skerrett. *II Sci Am* 113: 160-1 Ag 21 '15

Paving for piers, warehouses and garages. *plan Eng N* 73:953-4 My 13 '15

Philadelphia's Southwark piers completed. *II diags plans Eng Rec* 72:478-80 O 16 '15

Progress on 46th street pier coffer-dam, New York city. *II Eng N* 73:905 My 6 '15

Shipping piers in Southwark district of Philadelphia. *II diags plans Eng N* 74:421-4 Ag 26 '15

Suspended fenders a feature of new reinforced-concrete piers at San Francisco. F. G. White. *II diags Eng Rec* 71:231-3 F 20 '15

Work to start in deep cofferdam for New York pier. *II Eng Rec* 71:654-5 My 22 '15

See also Bulkheads; Wharves

Piers (bridges). See Bridges—Foundations and piers

**Piers (foundations)**

Large brick piers tested at laboratory of Bureau of standards; abstracts. J. H. Griffith and J. G. Bragg. *II Eng Rec* 71:460-1 Ap 10 '15; *Eng N* 74:242-3 Ag 5 '15; *Ind Eng* 15: 106 S '15

**Piers, Municipal**

Chicago municipal pier. *II diags Eng N* 74: 103-7 Ji 28 '15

Longest municipal pier in United States is nearing completion at Chicago. *II diags Eng Rec* 71:778-80 Je 19 '15

Severe tests show Chicago municipal pier to be sound in construction. *II Eng Rec* 72:76 Ji 17 '15

Superstructure of Chicago municipal pier. *II Eng N* 74:306-8 Ag 12 '15

**Piles**

1800 piles an hour; electrically operated machine. *II Elec W* 65:419 F 13 '15

**Pig iron**

Foundry iron prices Cincinnati and Chicago, 1876 to 1914. *Iron Age* 95:13 Ja 7 '15

Low carbon pig iron for iron castings. *Iron Age* 95:706-7 Ap 8 '15

Machines for breaking pig iron. *II Iron Tr R* 58:1069 My 27 '15

Pig-iron production in 1914. *Eng & Min J* 99:540 Mr 20 '15

Production of pig iron in the United States in the first half of 1915. *Iron Age* 96:369 Ag 12 '15; Same. *Iron Tr R* 57:324 Ag 12 '15

Properties of southern foundry pig iron. J. W. M'Queen. *Iron Age* 94:1294-5; Discussion. L. R. Lemolne. 94:1295-6 D 3 '14

See also Cast iron

**Pig iron mixer**

Modern foundry pig-iron mixer; operating and chemical results with blast-furnace and coke-oven gases; abstract. O. Simmersbach. *Iron Age* 98:312-13 O 7 '15

**Pigments**

Artistic painting and the old masters. M. Toch. *II J Fr Inst* 179:47-58 Ja '15

See also Dyes and dyeing; Paint

**Pike's Peak**

Build scenic highway up Pike's Peak. *II Eng Rec* 72:504-6 O 28 '15

**Pile drivers**

- Overhang piledriver. L. Goodday. diag Eng N 73:399 F 25 '15  
 Piledriver with traversing leads for driving trestle bents. II diags Eng N 73:28-9 Ja 7 '15  
 Raising a heavy 65-ft. piledriver. II Eng & Contr 44:347-8 N 3 '15  
 Trestle building with easily moved pile driver. G. A. Eaton. II Eng Rec 71:501 Ap 17 '15

**Pile driving. See Piles and pile driving****Pile pulling**

- Pile pulling methods compared. II Eng Rec 71:277 F 27 '15  
 Pulling falsework piles. II Eng N 73:553 Mr 18 '15  
 Pulling steel sheet piling with a steam hammer. W. F. Schaphorst. Eng & Contr 48:217 Mr 10 '15  
 Pulling steel sheetpiles with an inverted steam hammer. II Eng N 73:218-19 F 4 '15

**Pile testing**

- Boston foundations. J. R. Worcester. Boston Soc C E J 1:18-19 Ja '14; Discussion. 1:179-248, 395-417 Ap, S '14  
 Data on test borings and test piles at site of Field museum of natural history, Chicago. II Eng & Contr 44:141-3 Ag 25 '15  
 Effect of steaming process of creosoting on strength of Oregon fir piling; abstracts. H. B. Macfarland. Eng Rec 70:487-8 O 31 '14; Eng & Contr 42:481-3 N 18 '14; Summary. Eng N 72:863 O 29 '14  
 Jacking tests on piles. Eng N 74:559 S 16 '15  
 Loading test of lagged piles in soft silt. C. W. Staniford. II Eng N 74:76-7 Jl 8 '15  
 Pile tests indicate type of substructure for Technology buildings. C. T. Main. II Eng Rec 72:235-8 Ag 21 '15  
 Results of experience with piles and pile tests. J. W. Taussig. Eng N 72:1254-5 D 24 '14  
 Tests of piles in sand beach, Atlantic City, N. J. F. W. Abbott. diag Eng N 74:28-30 Jl 1 '15  
 Tests on treated and untreated Oregon fir piling. Ry Age 57:1156 D 18 '14

**Piles and pile driving**

- Cement-coated piles repaired under water. Eng Rec 72:674 N 27 '15  
 Data on test borings and test piles at site of Field museum of natural history, Chicago. II Eng & Contr 44:141-3 Ag 25 '15  
 Explosives loosen hard ground for driving concrete piles; abstracts. F. T. James. Eng N 74:558-9 S 16 '15; Eng Rec 72:240 Ag 21 '15; Eng & Contr 44:332-3 O 27 '15  
 Foundation piles cut off above water line. Eng N 74:158 Jl 22 '15  
 Machine for boring under-water holes in piles. II Eng N 74:815 Ag 12 '15  
 New deep water pier at Halifax, Nova Scotia. A. F. Dyer. II Concrete Cem 7:7-13 Jl '15; Same cond. Eng N 73:1204-10 Je 24 '15  
 Piledriving destroys a tunnel by clay pressure. II Eng N 74:404-5 Ag 26 '15  
 Pile-driving specifications. D: Gutman. Eng Rec 71:784 Je 13 '15  
 Pile penetration with and without water jet. F. Y. Parker. II Eng N 73:586-7 Mr 25 '15; Abstract. Assn Eng Soc J 54:159-67 Ap '15  
 Piles driven under difficulties. II Eng Rec 71:213 F 13 '15  
 Pressures on piles supporting masonry. R. P. V. Marquadsen. diags W Soc E J 20:541-7 Je '15; Same. Eng & Contr 44:392-3 N 17 '15  
 Special outrigger for driving piles under trestles. II diags Eng N 72:1266 D 24 '14  
 Why not a rational specification for a wooden pile? H. P. Goodrich. Eng Rec 71:627-8 My 15 '15; Same. Eng & Contr 43:456-7 My 19 '15  
*See also* Breakwaters; Concrete piling; Foundations; Pile drivers; Pile pulling; Pile testing

**Pitltdown man**

- Mankind in the making. W. P. Pycraft. II Sci Am 112:100-1 Ja 30 '15

**Pine**

- Commercial uses of longleaf pine. P. L. Buttrick. II Am For 21:896-908 S '15

**Forest service proposes grading rule for southern yellow pine.**

- Eng Rec 72:55-6 Jl 10 '15  
 Growing pine at a profit. J. R. Simmons. II Am For 21:1043-6 N '15  
 Life history of shortleaf pine. W. R. Mattoon. diags 10 pls map U S Agric Bul 244:1-46 '15  
 Longleaf pine. II Am For 21:895-6 S '15  
 Longleaf pine distinguished visually from loblolly or shortleaf. A. Koehler. II Eng Rec 72:319-20 S 11 '15  
 Norway pine in the lake states. T. S. Woolsey, Jr. and H. H. Chapman. II map U S Agric Bul 139:1-42 '14  
 Seed production of western white pine. R. Zon. U S Agric Bul 210:1-15 '15  
 Specifications for yellow-pine bridge and trestle timbers. Ry Age 59:67-8 Jl 9 '15  
 Story of white pine. H. Maxwell. II Am For 21:34-46 Ja '15  
 Utilization and management of lodgepole pine in the Rocky mountains. D. T. Mason. 7 pls map U S Agric Bul 234:1-54 '15  
 Waste pine wood utilization. J. E. Teeple. J Ind & Eng Chem 7:929-30 N '15

**Pine oil**

- Oils of the coniferae. IV—The leaf and twig oils of digger pine, lodgepole pine, and red fir. A. W. Schorger. J Ind & Eng Chem 7:24-6 Ja '15  
 Oleoresin of sand pine. A. W. Schorger. J Ind & Eng Chem 7:321-2 Ap '15

**Pine-shoot moth**

- Pine-shoot moth. II Am For 21:637-40 My '15

**Pineapples**

- Pineapple-canning industry of the world. J. A. Shriver. U S Bur For & Dom Com 91:1-43 '15  
 Utilizing wastes in canning pineapples. Sci Am S 79:361 Je 5 '15

**Pinions**

- Gears and pinions. R. H. Dalgleish. diags Elec Ry J 45:942 My 15 '15  
 Home-made pinion puller. C. M. Feist. II Elec Ry J 46:641 S 25 '15  
 Points on the installation and removal of pinions. R. H. Parsons. diags Elec Ry J 45:638-9, 674-5 Mr 27-28 Ap 3 '15  
 Removing pinions from motor axles. A. A. Ross. Elec Ry J 45:800 Ap 24 '15  
 Test of power forcing press pinion. Mach 21:770 My '15  
 Use of the gas flame in removing pinions. R. H. Parsons. Elec Ry J 45:988 My 22 '15

**Pinite**

- Inosite and pinite and some of their derivatives. H: G. Griffin and J. M. Nelson. Am Chem Soc J 87:1552-71 Je '15

**Pipe. See Pipes****Pipe brackets**

- Convenient form of wall bracket for pipes. II Elec W 66:979 O 30 '15

**Pipe cleaning**

- Machine for cleaning ascension pipes. diag Am Gas Light J 103:51 Jl 26 '15  
*See also* Water pipes—Cleaning

**Pipe covering**

- British method of coating steel pipes. W. Ing-ham. Eng & Contr 44:315 O 20 '15

- Covering protects large penstocks from freezing; cement-mortar coating supported by special steel frame around pipe and reinforced with wire mesh. H. C. Huber. II diags Eng Rec 71:269 F 27 '15

- Methods employed in field-coating two pipe lines—applying bitumastic enamel with special machines. Eng & Contr 44:311-12 O 20 '15

- Protection of riveted steel pipe. L. Metcalf. Eng & Contr 42:598-9 D 30 '14

- Tar paint proves better than lead paint on pipes. B. Dibble. Eng Rec 72:349-50 S 18 '15; Same. Eng N 74:973-4 N 18 '15; Same cond. Eng & Contr 44:181 S 8 '15

*See also* Steam pipe coverings**Pipe cutters**

- Strickler ratchet pipe cutter. II Munic Eng 49:156 O '15

**Pipe elbows**

- Circle to ellipse offset transition piece. diags Metal Work 84:616-17+ N 12 '15



**Pipe elbows—Continued**

- Frictional losses in elbows and ducts. C. A. Fuller. *diags Metal Work* 84:371-2 S 17 '15  
 Loss of pressure due to elbows in the transmission of air through pipes or ducts. F. L. Busey. *Am Soc Heat & V E* 19:366-76 '13  
 Pattern for offset in ventilation pipe. *Metal Work* 83:571-3+ Ap 16 '15  
 Patterns for compound curve elbow of copper. *diags Metal Work* 83:417-19 Mr 19 '15  
 Patterns for sheet metal transforming elbow. *diags Metal Work* 83:357-8 Mr 6 '15  
 Simple chart for designing furnace elbows. *Metal Work* 84:210-11 Ag 13 '15

**Pipe fitting**

*See also* Gas fitting; Pipe joints; Plumbing; Steam pipes

**Pipe fittings**

- Developing patterns for water pipe lateral. *diags Metal Work* 84:492-3 O 15 '15  
 Pattern for angular boot of varying section. *diags Metal Work* 84:456-7 O 8 '15

*See also* Furnaces, Hot air—Pipes and fittings

**Pipe flanges**

- Institution of mechanical engineers discusses strength of pipe flanges. *Engineer* 119:102, 104 Ja 29 '15  
 1915 U. S. standard schedule of flanged fittings and flanges. *Eng & Min J* 99:1121 Je 26 '15  
 Same. *Power* 41:732 Je 8 '15  
 Progress of standard flange schedule. *Heat & Ven* 12:44-6 Ag '15  
 Standardisation of pipe flanges and flanged fittings. J. Dewrance. *diags Engineer* 119:124-5 Ja 29 '15; *Abstract. Am Soc M E J* 37:189-90 Mr '15

**Pipe hangers**

- Various types of pipe hangers. H. L. Alt. *diags Dom Eng* 73:66-8, 100-2 O 16-23 '15

**Pipe joints**

- Acetylene welding of gas pipe. G. H. Manlove. *Il Iron Tr R* 56:272-3 F 4 '15; *Abstract. Ind Eng* 15:57-8 F '15  
 Autogenous pipe welding. *Il Iron Age* 95:296-7 F 4 '15  
 Ball joint for blow-pipe connection. *diags Metal Work* 83:394-5 F 19 '15  
 Cast iron submarine aqueduct. *Il diags Engineer* 120:176-8, 180 Ag 20 '15  
 Caulking lead joints with compressed air at Waltham, Mass. *Eng & Contr* 42:290-1 S 23 '14  
 Cement instead of lead for pipe joints. *Eng N* 74:1047-8 N 25 '15  
 Compounds for caulking pipe joints. F. B. Hays. *Dom Eng* 72:170 Ag 7 '15  
 Connecting cast-iron pipe sections under water. *Il Eng N* 74:896 N 4 '15  
 Easily made expansion joint. W. A. McGee. *diags Power* 43:277 Ag 24 '15  
 Economies of welded pipe connections. *Il Iron Age* 95:1289 Je 10 '15  
 Experiences with leadite for jointing cast iron water mains. H. A. Symonds. *Eng & Contr* 44:247-8 S 29 '15  
 Gas welding for pipe lines. J. F. Springer. *Il Munic J* 38:254-6 F 25 '15  
 How to make good joints in cast iron water mains with leadite. W. C. Hawley. *Eng & Contr* 44:200-2 S 15 '15; Same cond. (Experiences in caulking joints of water mains) *Eng Rec* 72:326 S 11 '15

- Joint details in high-head pipe lines—data on pipe lines throughout the world. L. C. Frohriebe. *Il Eng & Contr* 44:77-8 Jl 28 '15

- Joints for wrought-iron and steel pipe. R. S. Lord. *diags Eng N* 74:1035-7 N 25 '15

- Lead wool as jointing material; abstract. C. E. Reinicker. *Il Am Gas Light J* 102:242-6 Ap 19 '15; *Abstract (Methods and cost of pneumatic caulking of lead wool joints)* *Eng & Contr* 43:520-2 Je 9 '15

- Leadite joints for water pipes; abstracts. H. A. Symonds; W. C. Hawley. *Munic J* 39:443 S 16 '15

- Leakage from lead joints; abstracts. A. H. Smith. *Munic J* 39:470-1 S 23 '15; *Eng & Contr* 44:313-14 O 20 '15

- Making a Van Stone joint under difficulties. *Il Power* 42:300-1 Ag 31 '15

- Mortar joint laid with canvas band in wet trench. D. H. Fleming. *diags Eng Rec* 72:240 Ag 21 '15

- Narrows flexible joint submarine siphon. J. P. Hogan. *Il diags plans Eng Rec* 70:656-9 D 19 '14

- Oxyacetylene welding in pipe work. W. L. Rouche. *Il Power* 41:808-11 Je 15 '15

- Pipe couplings. R. S. Lord. *diags Eng Soc W Pa* 31:417-37 Je '15; *Excerpt. Iron Age* 95:1352 Je 17 '15; *Discussion. Eng Soc W Pa* 31:438-58 Je '15

- Pipe joint fails by pulling out at elbow. *Il Eng Rec* 72:390 S 25 '15

- Pipe joint for very high pressure. *diags Am Gas Light J* 103:333 N 22 '15

- Pipe welding at Panama Pacific exposition. *Il Metal Work* 84:237-8 Ag 20 '15

- Plant and methods employed in laying the flexible-jointed Narrows siphon of the Catskill aqueduct. S. W. Symons. *Il Eng & Contr* 43:218-19 Mr 10 '15

- Present practice of gas distribution by British undertakings. W. Hole. *Il Am Gas Light J* 103:307-9 N 15 '15

- Pressed steel union of new design. *Il Iron Age* 95:1296 Je 10 '15

- Repairing leaks in flexible jointed water main in 40 ft. of water, Galveston harbor, Texas. N. T. Blackburn. *diags Eng & Contr* 42:163-4 Ag 12 '14

- Roas expansion joint. *diag Power* 41:375 Mr 16 '15

- Thermit welding. W. R. Hulbert. *Am Gas Inst Pro* 9:pt 2, 1182-4 '14

- Use of riveted or screw jointed pipe for submerged lines. C. Herschel. *Eng & Contr* 44:409-10 N 24 '15

- Water main under New York harbor from Brooklyn to Staten Island. J. F. Springer. *Il diag Munic Eng* 49:32-5 S '15

- Welding of high pressure mains. J. D. Shattuck. *Il diags Am Gas Inst Pro* 9:pt 2, 945-1011 '14; Same abr. *Am Gas Light J* 102:54-5, 58-60, 66-9 Ja 35-F 1 '15; *Discussion. Am Gas Inst Pro* 9:pt 2, 1011-53 '14

- Welding water and gas mains. *Il Sci Am* 112:272+ Mr 20 '15

- Wiping a lead-covered cable. H. E. Weightman. *Il Elec R & W Elec'n* 66:901-2 My 15 '15

**Pipe laying**

- Barge with skidway lays 300-ft. line of 12-in. pipe in five hours. A. G. Elliot. *Il Eng Rec* 72:611 N 13 '15

- Cast iron submarine aqueduct. *Il diags Engineer* 120:176-8, 180 Ag 20 '15

- Conditions encountered and methods employed in laying water pipes in the congested streets of New York city. M. Blatt. *Eng & Contr* 44:246-7 S 29 '15

- Connecting cast-iron pipe sections under water. *Il Eng N* 74:896 N 4 '15

- Field and office methods in connection with the laying and repair of large water mains at San Diego, Calif. W. W. Albin. *Eng & Contr* 43:26-7 Ja 13 '15

- Flexible bronze tubing of the Partridge Island pipe line. *Il diag Eng N* 73:1107-8 Je 17 '15

- Same cond. *Am Gas Light J* 103:42 Jl 19 '15

- 48-inch cast iron force main for Atlantic City, New Jersey. L. Van Gilder. *Il Am Water Works Assn J* 1:704-8 D '14; Same. *Eng & Contr* 43:77 Ja 27 '15

- Installation and maintenance of services. R. B. Duncan. *Il diags Am Gas Inst Pro* 9:pt 2, 1052-1161; *Discussion. 9:pt 2, 1161-82 '14*

- Laying a 6-ft. pipe tunnel across the Milwaukee river. *Il diags Eng N* 73:522-4 Mr 18 '15

- Laying a submerged sewer outlet at San Francisco. A. J. Cleary. *Il Eng N* 73:325 F 18 '15

- Laying and repairing water mains. W. W. Albin. *Metal Work* 84:102 Jl 23 '15

- Laying submerged outfall sewer in surf. A. J. Cleary. *Il Eng N* 74:413-14 Ag 26 '15

- Laying water main in tunnel to avoid frozen ground. A. Cohn. *Eng N* 73:391-2 My 6 '15

- Limits of precision in laying submerged water mains. D. D. Clarke. *Eng & Contr* 44:76 Jl 28 '15

- Lowering a submarine pipe by piledrivers. *Il diag Eng N* 72:1264 D 24 '14

- Lowering mains under pressure and cost of laying water mains at San Diego. *Il Eng & Contr* 43:419-20 O 28 '14

**Pipe laying—Continued**

- Manufacturing and laying reinforced concrete sewer pipe at Philadelphia. *Eng & Contr* 43:245-7 Mr 17 '15
- Method and cost of constructing a 6-mile water main, of 3-in. screwed pipe, for New Orleans Lake Shore land co. A. M. Shaw. *Eng & Contr* 43:222 Mr 10 '15
- Method employed in lowering water intake pipe through ice at Gilbert, Minn. A. Cohn. *diags Eng & Contr* 44:81 Ag 4 '15
- Moving a 30-in. gas main. R. J. Van Wagner. *Eng N* 74:1082 D 2 '15
- Narrows flexible joint submarine siphon. J. P. Hogan. *diags plans Eng Rec* 70:656-9 D 19 '14
- Onelda street crossing under Milwaukee river. *diags Eng Rec* 70:616-17 D 5 '14
- Placing a jointed concrete pressure pipe inside a brick tunnel for water supply. Baltimore. *diags Eng N* 73:600-2 Mr 25 '15
- Protection of pipes when buried under the floor. *diag Elec W* 66:592 S 11 '15
- Pushing service pipes under pavements. F. C. Amsbury. *Am Water Works Assn J* 1:719 D 14 '14
- River crossings on the Nepaug pipe line. E. C. Miles. *diags Eng N* 73:249-51 F 25 '15
- Rush work after storm restores Galveston's water supply and rail connections. E. B. Van De Greyn. *diags Eng Rec* 72:500-1 O 23 '15
- 7000-foot pipe line floated to place in Lake Ontario in long sections. N. A. Brown. *diags Eng Rec* 72:20-1 J 1 3 '15
- Subaqueous pipe taken up and replaced 3 feet lower. E. M. Blake. *Eng Rec* 72:69-70 J 17 '15
- Three types of bridge for carrying gas mains across subway cuts. *diags Eng Rec* 72:207 Ag 14 '15
- Use of riveted or screw jointed pipe for submerged lines. C. Herschel. *Eng & Contr* 44:409-10 N 24 '15
- Water main under New York harbor from Brooklyn to Staten Island. J. F. Springer. *diags Eng Rec* 48:92-5 S 15 '15
- Welding of high pressure mains. J. D. Shattuck. *Am Gas Inst Pro* 9:pt 2, 894-1006 '14; Same cond. *Am Gas Light J* 103:87-8 F 1 '15
- See also* Pipe lines; Street openings

**Cost**

- Comparative costs of laying 16- and 12-ft. pipe. *Eng N* 74:318 Ag 12 '15
- Comparison of actual cost of laying 6-in. cast iron water pipe in 12 and 16 ft. lengths at Council Bluffs, Iowa. *Eng & Contr* 44:161 S 1 '15
- Cost of laying cast iron water pipe for railway service. C. R. Knowles. *Eng & Contr* 43:383 O 21 '14
- Costs of 12- and 16-ft. lengths of cast-iron pipe laid. F. C. Roberts. *Eng N* 74:841 S 30 '15
- Ten and three-quarters miles of 36-inch riveted-steel pressure line built on Sooke work. B. Ehle. *diags Eng Rec* 72:564-5 N 6 '15

**Pipe lines**

- Color scheme for identifying pipe lines. *Elec W* 65:936-7 Ap 10 '15
- Comparative merits of four types of location of underground utility lines. L. A. Dumond. *Eng & Contr* 44:357-9 N 3 '15
- Crossing water pipes over trolley wires. G. H. McKelway. *diags Eng Ry J* 45:770-1 O 9 '15
- Data on the life of wooden pipe pertaining to 79 pipe lines. D. C. Henny. *tables Eng & Contr* 44:127-30 Ag 18 '15; Same. *Eng N* 74:400-3 Ag 26 '15
- Design and construction features of Chicago's first utilities gallery. *diags Eng & Contr* 44:376-7 N 10 '15
- Hauling heavy water pipes. E. C. Miles. *diags Eng N* 73:97-9 Ja 28 '15
- Insulation of underground piping. *Elec R & W Elec N* 87:194 J 1 31 '15
- Joint details in high-head pipe lines—data on pipe lines throughout the world. L. C. Frohriebe. *diags Eng & Contr* 44:77-8 J 1 28 '15
- Lightning attraction for water and gas pipes. H. W. Spang. *Eng & Contr* 44:340 O 27 '15

- Method and cost of making a relocation survey of underground pipe lines. O. B. Carr. *plans Eng & Contr* 42:153-5 Ag 12 '14; Same cond. (Underground survey of Cincinnati). *Eng Rec* 71:38-40 Ja 9 '15
- Method of protecting water lines from freezing. *diags Elec W* 66:920 O 23 '15
- Methods employed in field-coating two pipe lines—applying bitumastic enamel with special machines. *Eng & Contr* 44:311-12 O 20 '15
- Pipe pontoon used for reclaiming pipe line in bed of Ottawa river. *Eng Rec* 71:755-6 Je 12 '15
- Pipe subways for the public utilities of Chicago. L. A. Dumond. *Eng Rec* 70:705-6 D 26 '14
- Practical procedure in designing steel penstocks. V. P. Marran. *diags Eng Rec* 71:355-6 Mr 20 '15
- Progress map records accurately water-main construction. *Eng Rec* 71:566 My 1 '15
- Protection of pipe lines against alkali. C. P. Bowie. *Eng & Min J* 99:367 F 20 '15
- 7000-foot pipe line floated to place in Lake Ontario in long sections. N. A. Brown. *diags Eng Rec* 72:20-1 J 1 3 '15
- Steam-pipe installation; two old boiler plants piped to give a common steam supply. H. E. Collins. *diags Power* 41:288-91 Mr 2 '15
- Subways for public-utility pipes and wires in Chicago streets. *Eng N* 73:60-1 Ja 14 '15; Same. *Am Gas Light J* 103:76 F 1 '15
- Underground pipes in New York city streets. *Eng N* 74:280-1 Ag 5 '15
- See also* Electrolytic corrosion; Gas distribution; Gas pipe lines; Petroleum pipe lines; Pipe laying; Pipes, Steel; Steam pipes; Street openings; Water pipes; Water supply engineering

**Law**

- United States mining statutes annotated. J. W. Thomson. *U S Bur Mines Bul* 94:pt 2, 1063-73 '15

**Pipe lining**

- Method of lining wrought, steel and cast iron pipe with cement. *diag Eng & Contr* 42:547-8 D 9 '14

**Pipe thawing. See Thawing****Pipe threading machines**

- Convenient control for Crane company pipe machine. *diags Iron Tr R* 57:691 O 7 '15
- Landis pipe threader and cutter. *diags Iron Tr R* 57:266 Ag 5 '15; *Iron Age* 96:291 Ag 5 '15; *Mach* 31:1020-1 Ag '15
- Ratchet stock of novel design. *diags Iron Tr R* 57:691 O 7 '15

**Pipe threads**

- Pipe threading die for screw machines. *diags Iron Age* 95:183 Ja 31 '15
- Protector for threaded ends of pipe. *diags Iron Age* 96:137 J 1 15 '15; *Iron Tr R* 57:138 J 1 15 '15

**Piperonal**

- Condensation of vanillin and piperonal with certain aromatic amines. A. S. Wheeler. *Am Chem Soc J* 37:1362-4 My '15

**Pipes**

- American pipe and fittings in South Africa. *Iron Age* 96:1330-1 N 25 '15
- Apparatus for making accelerated comparative durability tests of small pipe. *diags Eng & Contr* 43:582 Je 30 '15; *Eng N* 74:25 J 1 1 '15
- Electrolytic corrosion in pipes. *Metal Work* 84:302 S 3 '15
- External corrosion of cast iron pipe; abstracts. M. R. Pugh. *Munic J* 37:424-5 S 24 '14; *Am Soc M E J* 36:0199 O '14; *Eng & Contr* 42:377-81 O 21 '14; *Am Gas Light J* 103:65-70 Ag 2 '15
- Patterns for offset Y from circular pipe. *diags Metal Work* 84:67-9 J 1 16 '15
- Proportioning pipes. T. Taft. *Dom Eng* 72:198 Ag 14 '15
- Rules for thickness of cast-iron pipes. *Power* 42:115 J 1 27 '15
- Rules for thickness of wrought-iron and steel pipes. P. R. Björling. *Power* 42:143 Ag 3 '15
- Rules for weight of cast-iron pipes. *Power* 41:425 Mr 30 '15

**Pipes—Continued**

- Simple test for ascertaining whether pipe is of wrought iron or steel. D. R. Gwinn. *Eng & Contr* 44:411 N 24 '15
- Simple tests for identifying steel and wrought iron pipe. *Eng & Contr* 44:295 O 13 '15
- Simplified graphical or analytical process for the determination of dimensions of pipes in ventilating and heating installations; abstract. Brabbée and Bradtke. *Am Soc M E J* 87:552-3 S '15
- Standard wrought pipe bends. *diags* Power 42:546 O 19 '15
- Wrought-iron or steel pipes? L. C. Wilson. *Eng M* 50:247-54 N '15
- See also Air pipes; Gas pipes; Heating pipes; Hot water heating; Oil piping; Pipe laying; Pipe lines, and other headings beginning Pipe; Piping (power plants); Plumbing; Sewer pipes; Siphons; Steam pipes; Tubes; Water pipes

**Exhibitions**

- Panama-Pacific exposition. *l* Power 42:586-8 O 26 '15

**Repair**

- Repairing leaks and breaks. J. E. Noble. *diags* Power 40:818 D 8 '14; Same. *Eng & Min J* 98:1099 D 19 '14

**Specifications**

- Proper specifications for and inspection of interior gas piping. A. E. Turner. *Am Gas Inst Pro* 9:pt 2, 1811-26 '14; Same (Standardizing gas piping specifications) *Metal Work* 82:764-7 D 11 '14; Discussion. *Am Gas Inst Pro* 9:pt 2, 1327-37 '14
- Steel and iron pipe specifications. *Iron Tr R* 57:44-5 J 1 '15

**Pipes, Concrete**

- Casting concrete pipe out of doors in winter at Hamilton, Ontario. A. F. Macallum. *l* Concrete Cem 7:174 N '15
- Collapsible core for reinforced concrete pipe construction. *diag* Concrete Cem 5:238 D 14
- Concrete culvert pipe, and concrete piles. *Ry Age* 69:762-3 O 22 '15
- Construction of the Sooke gravity flow line at Victoria, B. C. *l* Concrete Cem 6:299-300 Je '15
- Holds pipe reinforcement while wiring is being done. *l* *Eng Rec* 71:785 Je 13 '15
- Load tests of concrete pipe. E. R. Conant. *l* *Eng N* 74:556-7 S 16 '15
- Manufacture of concrete sewer pipe. *l* *Metal Work* 82:833-4 D 25 '14
- Manufacturing and laying reinforced concrete sewer pipe at Philadelphia. *l* *Eng & Contr* 43:245-7 Mr 17 '15
- Parmley system of reinforced concrete arch construction. *l* *diags* *Munic J* 38:710 My 20 '15
- Placing a jointed concrete pressure pipe inside a brick tunnel for water-supply, Baltimore. *l* *diags* *Eng N* 73:800-2 Mr 25 '15
- Popularity of concrete pipe is increasing. C. E. Sims. *Concrete Cem* 7:36 J 1 '15
- Pressure test shows little leakage from huge molded concrete pipe. *l* *Eng Rec* 72:537-8 O 30 '15
- Reinforced-concrete pipes replace girder bridge. *l* *diag* *Eng Rec* 71:688 My 29 '15
- Severe test of concrete pipe joint. *l* *Concrete Cem* 7:191 N '15
- Tests of circular and egg-shaped reinforced concrete sewer pipe. A. T. Goldbeck. *l* *diags* *Eng & Contr* 43:807-9 Ap 7 '15; Same, with table. *Concrete Cem* 6:232-5 My '15; Same (Reinforced-concrete sewer pipe tested for stiffness and impermeability) *Eng Rec* 71:711-12 Je 5 '15
- Tests of some large reinforced concrete culvert pipe. W. J. Schlick. *l* *diag* *Concrete Cem* 6:78-80 F '15
- Virgin country renders concrete pipe line construction difficult. B. Ehle. *l* *diags* plan *Eng Rec* 72:507-10 O 23 '15

**Pipes, Furnace.** See Furnaces, Hot air—Pipes and fittings

**Pipes, Gas.** See Gas pipes

**Pipes, Sewer.** See Sewer pipes

**Pipes, Steel**

- Corrosion of iron and steel pipe. W: A. Dunkley; J. E. Noble. *Power* 41:584-5 Ap 27 '15
- Corrugated shell for pressure pipe. *l* *Iron Age* 36:15 J 1 '15
- Making pipes in India. *Metal Work* 82:767-8 D 11 '14
- Manufacture of steel pipe. *l* *Colliery* 35:333-4 Ja '15
- Movable bulkhead for testing steel pipe line in sections after erection. *diags* *Eng & Contr* 44:317 O 20 '15
- Practical procedure in designing steel penstocks. V. F. Marran. *l* *diags* *Eng Rec* 71:355-8 Mr 20 '15
- Protection of riveted steel pipe. L. Metcalf. *Eng & Contr* 42:598-9 D 30 '14
- Rapid rise of steel pipe. *Eng M* 48:sup1-2 Ja '15
- Rise of steel pipe. *Ry R* 56:88 Ja 9 '15
- Ten and three-quarters miles of 36-inch riveted-steel pressure line built on Sooke work. B. Ehle. *l* plan *Eng Rec* 72:564-5 N 6 '15

**Pipes, Water.** See Water pipes

**Pipes, Wood**

- Constructing logarithmic charts for hydraulic formulas. L. G. Hall. *Eng & Contr* 44:31-2 J 14 '15
- Costs of continuous wood stave pipe lines. S. O. Jayne. *Eng & Contr* 44:56-7 J 21 '15
- Data on the life of wooden pipe pertaining to 79 pipe lines. D. C. Henny. *tables* *Eng & Contr* 44:127-30 Ag 13 '15; Same. *Eng N* 74:400-3 Ag 26 '15; Excerpt. *Eng Rec* 72:162 Ag 7 '15; Excerpt. *Eng & Min J* 100:476 S 13 '15
- Decay of wood pipes. *Eng Rec* 71:110 Ja 23 '15
- Durability of wood pipe and factors affecting it. S. O. Jayne. *Eng & Contr* 44:19-21 J 17 '15
- Economic considerations justify wood-stave pipe for water-power penstocks; comparison with steel. R. E. Horton. *Eng Rec* 71:356-3 Mr 20 '15
- Experiences with machine banded wooden water pipe in New Hampshire; abstracts. A. W. Dudley. *l* *Eng & Contr* 44:223-4 S 22 '15; *Munic J* 39:471-2 S 23 '15
- Laying wood-stave pipe to replace steel pipe. *l* *Eng N* 74:1085 D 2 '15
- New Chittenden, Vt., plant of the Pittsford power co. T. Fraher. *l* *Eng N* 74:14, 16 J 1 '15
- Use, design, construction, cost and durability of wooden stave pipe. A. Swickard. *l* *diags* *Eng & Contr* 42:422-4, 516-19; 43:10-14, 146-8, 483-6 N 4, D 2 '14, Ja 6, F 17, Je 2 '15
- Values of  $n$  for wood stave pipe. S. O. Jayne. *Eng & Contr* 44:60 J 21 '15
- Wood pipes in New Hampshire. A. W. Dudley. *l* *Munic J* 39:471-2 S 23 '15

**Pipets**

- Convenient weighing pipet. F. Hall. *diag* *Am Chem Soc J* 37:2062-3 S '15
- Modified burette calibrating pipette and certain points in the use of such instruments. C. W. Foulk. *diag* *J Ind & Eng Chem* 7:689-93 Ag '15

**Pipettometers**

- Description of a pipettometer. W. D. Frost. *diag* *Am Chem Soc J* 36:1785-7 Ag '14

**Piping (power plants)**

- Cumberland Edison power plant. W. O. Rogers. *l* plans *Power* 42:707 N 23 '15
- New Morrison hotel plant, Chicago. T. Wilson. plan *Power* 42:71-3 J 20 '15
- New Penn Central power co.'s Williamsburg plant. W. O. Rogers. *l* plans map *Power* 42:570-8 O 26 '15
- Pipes for steam engines. F. W. Salmon. *Power* 41:88 Ja 19 '15
- Piping and supports in municipal plant. A. D. Williams. *l* *diags* *Power* 41:468-5 Ap 6 '15
- Power piping society has produced a standard power plant piping specification. *Iron Age* 96:388 Ag 12 '15
- Savage manufacturing co.'s power plant, Savage, Md. W. O. Rogers. *l* plans *Power* 43:38-43 J 13 '15
- Steam-pipe installation; two old boiler plants piped to give a common steam supply. E. E. Collins. *l* *diags* *Power* 41:288-91 Mr 2 '15
- Steam piping. *Power* 41:443-4 Mr 30 '15
- See also Steam pipes

## Piqua, Ohio

## Railroads

Pennsylvania improvements through Piqua; new station and second track on revised grade, eliminating eight street grade crossings. *Il plans Ry Age* 58:1003-6 *My* 14 '15

## Pistols

Development of the army pistol. E: C. Crossman. *Il Sci Am* 113:238 *O* 9 '15  
Sweep-milling and shaving operations on pistol frames. *Il diag Mach* 21:686-7 *Ap* '15

## Piston rings

A. C. A. makes two certified tests. Horseless Age 35:122 *Ja* 20 '15  
A. C. A. tests tireseal and multiple rings. Automobile 32:110+ *Ja* 21 '15  
Burd high-compression rings. *Il Power* 42:652 *N* 9 '15  
Facing piston rings. A. F. Mansberger. *diags Mach* 22:60 *S* '15  
Ford methods and the Ford shops. H. L. Arnold. *Il Eng M* 48:715-21 *F* '15  
Machining a piston ring. G. Strom. *diags Power* 41:353-4; 42:203 *Mr* 9, *Ag* 10 '15  
Machining a piston ring. H. R. Low. *Power* 42:312-13 *Ag* 31 '15  
Machining a piston ring. S: L. Robinson. *Il Power* 42:24-5 *Il* 6 '15  
Mixture for piston rings. W. J. Keep. *Foundry* 43:240 *Je* '15  
Piston ring problems. A. J. Mummert. Automobile 32:624-5 *Ap* 8 '15  
Piston ring problems—faults and advantages of various sorts of ring. C. H. Endebrock. Automobile 33:364-5 *F* 25 '15  
Steel piston rings. *Mach* 21:827 *Je* '15

## Pistons

Advantages of sand-cast pistons. W. M. Levett. Automobile 33:378-9 *N* 11 '15  
Allowances for gas engine piston fits: abstracts. E. W. Weaver. *Mach* 21:491 *F* '15; Horseless Age 35:110-11 *Ja* 20 '15; *Power* 41:245 *F* 16 '15  
Aluminum alloy piston. J. E. Diamond. *Il diag Automobile* 33:551-2 *S* 23 '15  
Aluminum alloy pistons. E. Gruenwald. Horseless Age 35:806+ *Je* 16 '15  
Aluminum piston critics answered. J. Leopold and J. E. Diamond. Automobile 33:744-5 *O* 21 '15  
Aluminum piston will never prove success in truly high-duty motor. F. R. Porter. Automobile 33:420-1 *S* 2 '15  
Aluminum pistons. Horseless Age 36:326 *O* 1 '15  
Aluminum pistons pass unchallenged. Automobile 32:1116-17 *Je* 24 '15  
American alloys best. J. Leopold. Automobile 33:969 *N* 25 '15  
Analyzing heat flow; use of aluminum for automobile motor construction. E. H. Sherbondy. Automobile 33:834-5 *N* 4 '15  
Chuckling ring and jaw extension for turning pistons. H: Doren. *diag Mach* 21:1010 *Ag* '15  
Cracked and seized pistons on Diesel engines. G: E. Windeler. *diags Power* 42:210-11 *Ag* 10 '15; *Abstract. Int Marine Eng* 20:416 *S* '15  
Early days of aluminum pistons. J. Leopold. Automobile 33:650-1 *O* 7 '15  
Ford methods and the Ford shops. H. L. Arnold. *Il Eng M* 48:711-15 *F* '15  
Light pistons make smooth motor. E. W. Walford. *diags Automobile* 32:362-3 *F* 25 '15  
Making aero motor pistons: tool equipment used on Cleveland automatics. D. T. Hamilton. *Il diags Mach* 21:300-2 *D* '14  
Old piston used for a core box. A. F. Albert. *diags Mach* 21:748 *My* '15  
Overcoming the slap of aluminum pistons. P. M. Heldt. Horseless Age 36:227-8 *S* 1 '15  
Piston practice; present day design with special reference to aluminum alloy. J. E. Diamond. *Il diags Automobile* 33:871-7 *N* 11 '15; *Discussion. 33:921-4 N* 18 '15  
Predicts adoption of aluminum pistons as standard by majority of cars. W. M. Levett. Automobile 33:421+ *S* 2 '15  
Prefers iron or steel to aluminum. E. H. Sherbondy. Automobile 33:651-2 *O* 7 '15  
Rolled and forged steel pistons. W. W. Scott, Jr. *Il diags Ry R* 56:48-52 *Ja* 9 '15; *Same cond. Ry Age (Mech ed)* 89:343-5 *Il* '15; *Abstract. Am Soc M E J* 37:191-2 *Mr* '15  
Watch your pistons! Old Scotch. *Int Marine Eng* 20:407 *S* '15

Pitch filler. See Pavements—Fillers

## Pitchblende

Pitchblende of Cornwall, England. R. A. F. Penrose, Jr. *Econ Geol* 10:161-71 *F* '15

## Pitchometer

Pitchometer and its use. N. I. Mosher. *diag Mach* 21:923 *Il* '15

## Pitometer

Graphic recorder for the Cole pitometer. *Il diags Eng N* 73:875 *My* 6 '15  
Increasing precision in pitometer survey work at Washington, D. C.—meter reading. *Eng & Contr* 43:26 *Ja* 13 '15  
Rating a pitometer. C. G. Gillespie. *Il Eng Rec* 72:144 *Il* 31 '15  
Water waste surveys in the District of Columbia. P. Lanham. *Il Eng & Contr* 43:275-6 *Mr* 24 '15

## Pitot tube

Gas volume and dust concentration determination in connection with the Cottrell process. W: N. Drew. *diags Am Soc M E J* 37: 676-8 *D* '15  
Standardization of the use of the Pitot tube: report of committee. *diags Am Soc Heat & V E* 20:210-15 '14

See also Pitometer

## Pittsburgh, Pennsylvania

## Architecture

Masonic temple, Pittsburgh. *Il Arch & Bldg* 47:289-94 *Ag* '15

## Bridges

Construction features of the Bloomfield bridge. A. E. Sortore. *Il Eng & Contr* 43:6-8 *Ja* 6 '15  
Design features of the cantilever, simple-truss and girder spans of the Bloomfield bridge. *diags Eng & Contr* 42:240-3 *S* 9 '14  
Design features of the substructure and approaches of the Bloomfield bridge. *diags Eng & Contr* 42:296-7 *S* 23 '14  
Design of the 531-ft. truss spans of the North side Point bridge. *diags Eng & Contr* 41: 353-61, 684-5; 42:196-3 *Mr* 25, *Je* 17, *Ag* 26 '14

## Parks

Schenley park approach competition. C. F. Plat. *Il plan Arch Rec* 38:595-9 *N* '15

## Railroads

New freight and transfer station by Pennsylvania R. R. *Il Ry R* 56:278-80 *F* 27 '15

## Rapid transit

Pittsburgh railways claim department. *Elec Ry J* 46:139-45, 436-41 *Il* 24, *S* 11 '15

## Water supply

Construction features of the North side reservoir. E. E. Lanpher and J. S. Cole. *Il Eng Soc W Pa* 30:669-86 *O* '14; *Same. Eng & Contr* 42:577-9 *D* 23 '14; *Same cond. Munic J* 38:558-62 *Ap* 22 '15; *Discussion. Eng Soc W Pa* 30:686-92 *O* '14  
Design and construction of the North side reservoir. *Il diags plan Concrete Cem* 6:227-31 *My* '15  
Interesting chart of Pittsburgh water system, showing its recent transformation. *diag Eng N* 73:250-1 *F* 11 '15

## Pittsburgh university. Mellon Institute

Dedication of the new building of the Mellon Institute. W. A. Hamor. *Il J Ind & Eng Chem* 7:326-8 *Ap* '15; *Same cond. Met & Chem Eng* 13:266-7 *Ap* '15

Description of the new building of the Mellon Institute. W. A. Hamor. *Il plans J Ind & Eng Chem* 7:333-43 *Ap* '15

Object and work of the Mellon Institute. R. F. Bacon. *J Ind & Eng Chem* 7:343-7 *Ap* '15

Research Institute; Mellon laboratories are fully equipped for solving manufacturing problems. C. F. Williams. *Il Iron Tr R* 56:768-9 *Ap* 15 '15

Research work at the University of Pittsburgh. S: R. Scholes. *Foundry* 43:237 *Je* '15

Unique system of service to industry. J: J. O'Connor. *Il Am Ind* 16:27-8 *O* '15

**Pituitary gland**

On the presence of histidine-like substances in the pituitary gland (posterior lobe). T. B. Aldrich. *Am Chem Soc J* 37:203-8 Ja '15  
Therapeutic uses of preparations of the ductless glands. R. G. Torrey. *Sci Am S* 80:134 Ag 28 '15

**Placer mining.** See **Hydraulic mining**

**Plague**

See also **Rat proofing**

**Plainfield, New Jersey**

**Sewerage**

Operation of the Plainfield sewage-works. J. R. Downes. *Eng N* 73:234-5 F 4 '15

**Plancton.** See **Plankton**

**Plane table.** See **Topographical drawing**

**Planimeters**

Improved rolling hatchet planimeter. F. W. Salmon. *diag Power* 42:122 JI 27 '15  
Polar planimeter. S. B. Redfield. *Power* 42:619-20 N 2 '15  
Recording power plant operations. J. C. Smallwood. *II Eng M* 50:386-9 D '15

**Planing**

Planing a block square. H. Murphy. *diag Mach* 21:495 F '15

**Planing machines**

Building rotary planing machines. *II Iron Age* 94:1440-2 D 24 '14  
Gleason 30-foot herringbone and spur gear planer. *II diag Mach* 21:503-5 F '15  
Handling large work on a small planer. J. Leafstrom. *diag Mach* 22:80 S '15  
Home-made planer used to size large timbers on the job. R. W. Cady. *II Eng Rec* 72:396 S 25 '15  
Motor driven slide plate planer. *II Iron Tr R* 56:269-70 F 4 '15; *Ry Age (Mech ed)* 89:95 F '15  
Scientific American and the planing mill monopoly. *Sci Am* 112:546 Je 5 '15  
16-ft. four-head planing machine. *II Iron Age* 96:131-2 JI 16 '15  
Turret head for planing guides, shoes and wedges. B. O. Yearwood. *II Ry Age (Mech ed)* 89:187 Ap '15

See also **Machine tools**

**Plankton**

Plankton, the ultimate food. *Sci Am S* 79:66 Ja 30 '15

**Plans (architecture).** See **Architectural drawing**; **Architecture—Designs and plans**; **Architecture, Domestic—Designs and plans**

**Plant breeding**

Artificial production of vigorous trees. *Sci Am S* 79:150 Mr 6 '15  
Experiments in hybridizing Japanese flowers. W. P. Jenny. *Sci Am S* 79:18-19 Ja 9 '15

**Plantations, Railroad.** See **Railroads—Plantations**

**Plants**

Promoting the growth of vegetation on the slopes. W. F. Rensch. *Ry Age* 58:471-2 Mr 12 '15

See also **Insectivorous plants**

**Movements**

See **Heliotropism**

**Temperature**

Temperature in plants. S. L. Bastin. *II Sci Am* 112:54 Ja 9 '15

**Plants, Chemical analysis of**

Modified method for determining carbon-free ash in plant substances. G. E. Boltz. *J Ind & Eng Chem* 7:859-60 O '15  
Total amino nitrogen in the seedlings of the Alaska pea. T. G. Thompson. *Am Chem Soc J* 37:230-5 Ja '15

**Plants, Effect of narcotics on**

How narcotics affect plants. *Sci Am S* 79:267 Ap 24 '15

**Plants, Effect of radioactive substances on**

Influence of radio-active earth on plant growth. H. H. Rusby. *II Sci Am S* 79:216-18, 228-30 Ap 3-10 '15

Radio-active ores and plant life. H. Bastin. *II Sci Am* 112:335 Ap 10 '15

**Plants, Insectivorous.** See **Insectivorous plants**

**Plants, Irritability and movements of**

Plant autographs and what they mean. *II Sci Am* 112:253-4 Mr 13 '15  
Scientific work of Prof. J. C. Bose. J. Kunz. *Sci Am S* 79:291 My 8 '15  
Testing the sensibility of plants. J. C. Bose. *II Sci Am S* 79:244-6 Ap 17 '15

**Plants, Poisonous.** See **Poisonous plants**

**Plaster and plastering**

Bonding plaster coating to interior walls and ceilings. *Concrete Cem* 6:36-7 Ja '15

See also **Stucco**

**Plaster casts**

Making the models and molds for ornamental concrete work—using plaster and gelatin. *II Concrete Cem* 6:150-1 Mr '15  
Use of glue molds under serious difficulties: reproduction of monuments at Quirigua. N. M. Judd. *II Concrete Cem* 6:151-4 Mr '15; Same. *Sci Am S* 80:56-7 JI 24 '15

**Plaster of Paris**

How to use plaster of Paris. D. Gordon. *Foundry* 43:51 F '15

**Plastering.** See **Plaster and plastering**

**Plasticity**

Atterberg plasticity method. C. S. Kinnison. *U S Bur Stand Tech Pa* 46:1-18 '15

Filing system in the chemistry of amorphous substances. W. K. Lewis. *Met & Chem Eng* 13:921 D 1 '15

Plasticity of clay and its relation to mode of origin. N. B. Davis. *II Am Inst Min E Bul* 98:301-30 F '15

**Plate printing**

Linotype slugs used as plate base. *II Inland Ptr* 56:400 D '15  
Making the plates for a modern newspaper perfecting press. A. W. Birdsall. *Inland Ptr* 54:551-3 Ja '15  
Reverse plate—its advantage to the printer. J. L. Frazier. *Inland Ptr* 55:641-3 Ag '15  
Standardization of the trimming of blocks for engravings. F. W. Gage. *II Inland Ptr* 55:246-8 My '15

**Plates, Iron and steel**

Bottom plates for pouring ingots. R. H. Irons. *II Iron Age* 96:1221-2 N 25 '15  
Failure of British steel ship plates. W. J. B. Wilson. *II Iron Age* 96:610-13 Mr 18 '15; Abstract. *Am Soc M E J* 37:57-8 Ja '15  
Magnet crane for handling steel plates. *II Iron Tr R* 57:492 N 9 '15  
Perforated-metal in Italy. *Metal Work* 84:211 Ag 13 '15  
Surprising failure of steel ship plates. *Int Marine Eng* 20:50-1 F '15

See also **Roller plates**

**Plating**

Advance in automatic plating machinery. M. Doyle. *II Metal Ind n s* 13:481-3 O '15  
Economy of copper cyanide. C. Dittmar. *Metal Ind n s* 13:526 D '14  
Keeping cost in a job plating shop. H. J. Ter Doest. *Metal Ind n s* 13:189 My '15  
Metal cyanides. *Metal Ind n s* 13:474-5 N '15  
Modern piece work system for a large plating department. C. H. Fleischer. *Metal Ind n s* 13:326-6 Ag '15  
Modern plating department order system. C. H. Fleischer. *Metal Ind n s* 13:151-2 Ap '15  
Modern plating practice: a piecework system as used by the National cash register company. W. Fraune. *II Metal Ind n s* 13:1-4 Ja '15  
Plating by impact. *II diag Sci Am S* 79:406 Je 28 '15  
Preparation of chemical salts: gold chloride, silver chloride, silver cyanide. C. H. Proctor. *Metal Ind n s* 13:10 Ja '15  
Protective coatings for iron and steel. E. P. Later. *Foundry* 42:497-8 D '14  
Simple and successful dip gilding solution. C. H. Proctor. *Metal Ind n s* 13:323 Ag '15  
See also **Copper plating**; **Electroplating**; **Galvanizing**; **Gold plating**; **Metal coating**; **Nickel plating**; **Silver plating**

**Platinum**

Determination of platinum, palladium and gold. A. M. Smoot. *Eng & Min J* 99:700-1 Ap 17 '15

**Platinum—Continued**

- Emissivity of metals and oxides; the total emissivity of platinum and the relation between total emissivity and resistivity. P. D. Foote. U S Bur Stand Bul 11:607-12 My 27 '15
- Platinum in California. Eng & Min J 99:1045 Je 12 '15
- Platinum in litharge. F. Michel. Eng & Min J 100:315 Ag 21 '15

**Testing**

- Study of the quality of platinum ware with special reference to losses on heating. G. K. Burgess and F. D. Sale. U S Bur Stand Bul 12:289-314. Bibliography. 314-16 N 8 '15; Same cond. J Ind & Eng Chem 7:501-4 J1 '15

**Platinum plating**

- Gold and platinum plating; practical formulae with instructions for their use. M. Kateridge. Metal Ind n s 13:109-10 Mr '15

**Plattsburg military camp**

- Business men's training camp at Plattsburg. U Sci Am 113:182-3 Ag 28 '15

**Player-piano rolls. See Piano player records****Playgrounds**

- Play ground construction at Boston, Mass.; itemized list of proposed expenditures. Eng & Contr 44:sup22-3 O 27 '15

**Pilgrimage press, Norwood, Massachusetts**

- Scientific management in the office. R. T. Kent. Iron Age 95:32-6, 142-4 Ja 7-14 '15

**Pilotron**

- Pure electron discharge and its applications in radio telegraphy and telephony. I. Langmuir. diags Gen Elec R 18:334-9 My '15; Abstract. Elec W 65:1247 My 15 '15

**Plows, Motor. See Motor plows****Plumbers**

- English writer lauds United States plumbers. E. Fain. Dom Eng 69:392 D 26 '14
- Federal court ruling in the Des Moines case. Dom Eng 71:161-2 My 8 '15
- Government prosecution of master plumbers. L. C. Boyle. Dom Eng 72:139-41 J1 31 '15
- National association of master plumbers in annual convention at Chicago. Dom Eng 72:59-79 J1 17 '15
- National association of master plumbers 33d annual convention, Chicago, July 13-15. Metal Work 84:131-9 J1 23 '15
- New York plumbing apprentices. Metal Work 84:464 O 8 '15
- Ohio master plumbers meet in convention. Metal Work 83:302-4 F 19 '15
- Plumber's contribution to civilization. E. F. Dunne. Dom Eng 69:389 D 26 '14
- Relation of the plumber to the public. C. O. Walker. Dom Eng 71:35-6 Ap 10 '15
- Report of Chicago master plumbers' sanitary committee. Dom Eng 72:136-7 J1 31 '15
- Report of the special joint committee on plumbing apprenticeship in New York city. Dom Eng 72:371 S 25 '15
- Women as successful master plumbers. B. H. Albee. U S Bur Stand Bul 11:607-12 My 27 '15
- See also names of societies, e. g. National association of master plumbers; New Jersey state association of master plumbers

**Plumbing**

- Building construction and modern plumbing. J. L. E. Firmin. Metal Work 84:624-5 N 12 '15
- By-pass, dead-end and blind vent defined. diags Dom Eng 73:270-1 N 27 '15
- Heating and plumbing in paint factory. U Sci Am 113:182-3 Ag 28 '15
- Memories of bygone days. J. Troland. Dom Eng 69:412-13 D 26 '14
- Modern equipment in Detroit athletic club. U Sci Am 113:182-3 Ag 28 '15
- Modern London plumbing supply house. U Sci Am 113:182-3 Ag 28 '15
- Modern methods of venting fixtures. J. Graham. diags Dom Eng 71:302-4; 72:5-6 Je 12, J1 3 '15
- Modern plumbing in its relation to building. J. L. E. Firmin. Dom Eng 73:145-6 O 30 '15

**National association of master plumbers sanitary committee's report. Dom Eng 72:112-13 J1 24 '15**

- Plumbing and heating in Burke home. U Sci Am 113:182-3 Ag 28 '15
- Plumbing and heating in California bungalow. A. C. Shaver. U Sci Am 113:182-3 Ag 28 '15
- Plumbing and heating in Cincinnati hospital. K. C. Cardwell. U Sci Am 113:182-3 Ag 28 '15
- Plumbing and its relation to public health. W. C. Groeniger. Metal Work 83:415-16+ Mr 19 '15
- Plumbing equipment in Jersey high school. U Sci Am 113:182-3 Ag 28 '15
- Plumbing equipment in Loomis institute, Windsor, Conn. U Sci Am 113:182-3 Ag 28 '15
- Plumbing equipment in mercantile building. U Sci Am 113:182-3 Ag 28 '15
- Plumbing equipment of Montclair, N. J., high school. U Sci Am 113:182-3 Ag 28 '15
- Plumbing equipment of swimming pool, Louisville, Ky. U Sci Am 113:182-3 Ag 28 '15
- Plumbing in a suburban residence. J. Graham. plans Dom Eng 70:68-70 Ja 16 '15
- Plumbing in eastern district Y. W. C. A. U Sci Am 113:182-3 Ag 28 '15
- Plumbing installation and sewage disposal. C. A. Whittemore. diags Brickb 24:81-4, 115-18, 137-40, 171-3, 197-200 Ap-Ag '15
- Plumbing installation in movie theater. U Sci Am 113:182-3 Ag 28 '15
- Plumbing practice in southern Australia. Metal Work 83:508+ Ap 2 '15
- Plumbing system in Bridgeport bank building. U Sci Am 113:182-3 Ag 28 '15
- Plumbing system in Seamen's church institute. U Sci Am 113:182-3 Ag 28 '15
- Plumbing system of modern office building. U Sci Am 113:182-3 Ag 28 '15
- Plumbing system of public market station. U Sci Am 113:182-3 Ag 28 '15
- Plumbing work in Harvard club of New York. U Sci Am 113:182-3 Ag 28 '15
- Plumbing work in Kentucky high school. U Sci Am 113:182-3 Ag 28 '15
- Typical country plumbing installations. U Sci Am 113:182-3 Ag 28 '15
- Typical restaurant plumbing system. G. D. Crain, Jr. U Sci Am 113:182-3 Ag 28 '15
- Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:386, 313-15, 338-40 S 4-18 '15
- See also Bath rooms; Drainage, House; Gas fitting; Hot water supply; Plumbing fixtures; Plumbing laws; Plumbing supplies; Plumbing trade; Sanitary engineering; Sewer gas; Shower baths; Toilet rooms; Water closets

**Standards**

- Need of a national plumbing code. T. J. Claffy. Dom Eng 71:247-9 My 29 '15; Same. Metal Work 83:875-7 Je 18 '15

**Study and teaching**

- Sheet metal and plumbing work exhibited. U Sci Am 113:182-3 Ag 28 '15
- Training the master plumber's apprentice. W. A. Fink. Metal Work 83:888-9 Je 18 '15

**Traps**

- Construction and action of grease traps. diags Dom Eng 70:11 Ja 2 '15
- Different types of grease traps. J. Graham. diags Dom Eng 72:369-71 S 25 '15
- Drum trap and its types. J. Graham. diags Dom Eng 72:30-2 J1 10 '15
- Location of the grease trap. diags Dom Eng 71:339-40 Je 19 '15
- Plumbing installation and sewage disposal. C. A. Whittemore. diags Brickb 24:115-16 My '15
- Sand and oil trap for garage. diags Metal Work 84:523 O 22 '15
- Plumbing fixtures
- Hidden fixture overflows a menace. S. C. Fredricks. Metal Work 83:838 Je 11 '15

**Plumbing fixtures—Continued**

- Kohler company shows the plumber what he can purchase. *11 Metal Work 83:447-8 Mr 19 '15*
- Novel bath tub and wash stand. C. L. Edholm. *11 Metal Work 84:588 N 5 '15*
- Plumbing installation and sewage disposal. C. A. Whittemore. *diags Brickb 24:116-18 My '15*

*See also Water closets***Plumbing laws and regulations**

- Important plumbing legislation pending in Ohio. *Dom Eng 70:405 Mr 27 '15*
- Los Angeles secures new plumbing ordinance. *Dom Eng 72:72 J1 3 '15*
- Massachusetts supreme court hands down decision favoring permit to journeyman plumber. *Dom Eng 69:288 D 5 '14*
- Master plumbers scrutinize proposed plumbing laws for Massachusetts. *Dom Eng 71:223 My 22 '15*
- Need of a national plumbing code. F. J. Hanley. *Dom Eng 72:176-8 Ag 7 '15*
- Need of a national plumbing code. T. J. Claffy. *Dom Eng 71:247-9 My 29 '15; Same. Metal Work 83:875-7 Je 19 '15*
- New plumbing law for Oklahoma. *Dom Eng 72:259-60 Ag 23 '15*
- New plumbing ordinance for Manchester, Conn. *Dom Eng 73:178-80, 205-6 N 6-13 '15*
- New plumbing ordinance for Marietta, O. *Dom Eng 70:114 Ja 23 '15*
- Pasadena plumbing code and the chief sanitary inspector. W. R. Marshall. *Dom Eng 70:338-9 Mr 13 '15*
- Plumbing bill pending before Oklahoma state legislature. *Dom Eng 69:334 D 12 '14*
- Plumbing law requires competence. *Metal Work 84:133-3 J1 23 '15*
- Plumbing standards and local regulations. *11 diags Metal Work 83:691-2 My 14 '15*
- Proposed plumbing law for Pennsylvania. *Dom Eng 71:379-80 Je 5 '15*
- Proposed plumbing laws for Massachusetts. *Dom Eng 71:158-9 My 8 '15*
- Proposed state law for licensing steam-fitters in Iowa. *Dom Eng 70:308-9 Mr 6 '15*
- Rain water leaders. E. R. Porter. *diags Dom Eng 73:230-1 N 20 '15*
- Sanitary regulations in Canada. *Metal Work 83:543 Ap 9 '15*
- Should plumbing laws be enacted by state or city? F. R. King. *Metal Work 83:229-31 F 5 '15*
- Texas district court decides house owner can install own plumbing. *Dom Eng 73:111-12 O 23 '15*

**Plumbing shops**

- Clearing the way for the season's business. *11 Metal Work 83:427-9+ Mr 19 '15*
- Cleveland showroom for sanitary goods. *11 Metal Work 83:522-3 Ap 2 '15*
- Combination shop can best serve community. *11 Metal Work 83:85-8+ Ja 8 '15*
- Combination shop in Lake Villa, Ill. *11 Metal Work 84:365-6+ S 17 '15*
- Combination shop in southern Australia. *Metal Work 83:93 Ja 8 '15*
- Combination shop of convenient arrangement. *11 plan Metal Work 83:57-9 Ja 1 '15*
- Combination shop sets example in system. *11 Metal Work 83:434-5 Mr 19 '15*
- Master plumber and the show window. *11 Metal Work 83:349-50 Mr 5 '15*
- Money in combination shop's window display. *11 Metal Work 84:454-5 O 8 '15*
- Photos advertise combination shop's products. *11 Metal Work 84:395-6 S 24 '15*
- Practical helps in retailing plumbers' goods. S. L. Krebs. *Dom Eng 70:305-7 Mr 6 '15*
- Successful management of combination shop. *11 Metal Work 83:815-16 Je 4 '15*
- Window observers are future customers. *11 Metal Work 84:672 N 26 '15*

**Plumbing supplies**

- Among the exhibitors and salesmen. *11 Dom Eng 72:80-90 J1 17 '15*
- Eastern supply association's summer meeting. *Dom Eng 71:377-9 Je 26 '15*
- Handling of malleable fittings. W. J. Woolley. *Dom Eng 72:107-9 J1 24 '15*
- Judicious buying of plumbing materials. *Metal Work 83:59-60 Ja 1 '15*

Meeting of the Eastern supply association; list of those in attendance. *Dom Eng 70:282-3 F 27 '15*

- Modern London plumbing supply house. *11 Metal Work 83:186-8 Ja 29 '15*
- New goods at Master plumbers' convention. *11 Metal Work 84:221-7 Ag 13 '15*
- Plumbing supplies and jobbers' problems. L. O. Koven. *Metal Work 84:589 N 5 '15*
- 6th meeting of the Central supply association; list of members represented. *Dom Eng 70:283-4 F 27 '15*

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- Annual congress of the trade. *Dom Eng 69:415-35+; 70:13-15 D 26 '14, Ja 2 '15*
- Beginner's troubles in plumbing work. F. W. Page. *Metal Work 83:290 F 19 '15*
- Better business building blocks. G. R. Adams. *Dom Eng 73:105-7, 143-4 O 23-30 '15; Same cond. Metal Work 84:533-5 O 22 '15*
- Building plumbing trade by mail. H. Whitehead. *Dom Eng 71:6-9 Ap 3 '15*
- Business depression and the plumbing trade. S. L. Barnes. *Metal Work 84:130-1 J1 23 '15*
- Business methods for the master plumber. W. A. Fink. *Dom Eng 65:70-1, 107-8, 169-70, 206-7, 267-9, 306-7, 373; 66:40-1, 170-1, 299-300; 67:6-7, 64-5, 264-5, 63-7-8, 160, 254-5, 358-9, 392; 69:19, 70-1, 130-1, 200, 269-70, 331-2, 368-9; 70:22-3, 103, 204-5, 273-4, 369; 71:34-5, 101-3; 72:171-2, 227-8, 348-4 O 18-25, N 8-15, 29 D 6, 20 '13, Ja 10, F 7, Mr 7, Ap 4, 18, My 30, J1 4, Ag 8, 29, S 19, 26, O 3, 17, 31, N 14, 28, D 12-19 '14, Ja 9, 23, F 13, 27, Mr 20, Ap 10, 24, Ag 7, 21, S 18 '15*
- Constructive publicity for the plumbing trade. *Dom Eng 73:206-7 N 13 '15*
- Country business for the plumber. C. D. Crain. *Dom Eng 71:336-7 Je 19 '15*
- Credit systems for plumbers and fitters. W. A. Fink. *Dom Eng 73:9-10, 169-70, 297 O 2, N 6, D 4 '15*
- How one master plumber was successful. *Metal Work 83:55-6 Ja 1 '15*
- How service may be right arm of success. G. R. Adams. *Dom Eng 69:360-3 D 19 '14*
- Loose credits as a trade demoralizer. H. H. Highlands. *Dom Eng 70:77 Ja 16 '15*
- Manufacturers and aggressive sales seekers. *11 Metal Work 83:14-25 Ja 1 '15*
- Master plumbers' idea of profit in labor. H. F. Baillet. *Metal Work 83:873-4 Je 18 '15*
- Motor trucks and business efficiency. *11 Metal Work 83:50-2 Ja 1 '15*
- Office helps for the master plumber. J. F. Scott. *Dom Eng 71:66-7; 72:7-8 Ap 17, J1 3 '15*
- Questioning the plumber's bill. *Dom Eng 73:197 N 13 '15*
- Retired plumber's advice to beginners. D. L. Hanson. *11 Dom Eng 68:224-6; 69:104-6, 192-4, 324-6, 401-3; 70:236-8, 406-8; 71:98-100, 250-2; 72:257-8, 373-4; 73:138-40, 268-70 Ag 23, O 24, N 14, D 13, 26 '14, F 20, Mr 27, Ap 24, My 29, Ag 28, S 25, O 30, N 27 '15*
- Selling helps that have proved effective. *Metal Work 83:2-9 Ja 1 '15*
- Standard prices for standard services. W. E. Clow. *Metal Work 83:254 F 12 '15*
- Strength and weakness in the master plumber. W. J. Woolley. *Metal Work 83:89-91+ Ja 8 '15*
- Successful merchandising for the plumber. H. Whitehead. *Dom Eng 70:5-6, 78-9 Ja 2, 16 '15*
- Training the master plumbers' apprentice. W. A. Fink. *Metal Work 84:30-1 J1 2 '15*

*See also Plumbing fixtures; Plumbing shops; Plumbing supplies***Accounting**

- Business methods for the plumber and fitter. W. A. Fink. *Dom Eng 71:185-6 My 15 '15*
- Cost accounting in plumbing establishments. H. G. Helstrum. *Metal Work 83:53-4 Ja 1 '15*
- Cost system of Denver combination shop. J. R. Elliott. *Metal Work 84:274-8 Ag 27 '15*
- Merchant plumber's overhead expense. J. J. Foy. *Metal Work 83:261-3 F 12 '15*
- Overburdening the overhead expense. H. Whitehead. *Dom Eng 72:817-18 S 11 '15*

**Plumbing trade—Accounting—Continued**

- Overhead expense per man per hour. W. A. Fink; R. H. Pfing-Felder. Dom Eng 71:335-6 Je 19 '15  
 Practical cost system for combination shop. Metal Work 84:306, 340-1, 361-1, 397-8 S 3-24 '15  
 What is cost of material and labor? W. A. Fink. Dom Eng 72:105-6 J1 24 '15

**Advertising**

- Assisting the trade in newspaper advertising. 11 Dom Eng 73:272-4 N 27 '15  
 Business methods for the plumber and fitter. W. A. Fink. Dom Eng 69:331-2; 70:42-3, 273-4; 71:101-2 D 12 '14, Ja 9, F 27, Ap 24 '15  
 Interesting the farmer in good plumbing. J. A. Owens. Dom Eng 72:287-8 S 4 '15  
 Seasonable show window advertising. L. Axworthy. Metal Work 84:658 N 19 '15  
 Show room advertising for merchant plumbers. C. G. Perry. Metal Work 83:839-40 Je 11 '15  
 Where to dig for fall profits. 11 Metal Work 84:267-71 Ag 27 '15

**Plumbboxan**

- Plumbboxan process for producing oxygen and nitrogen from atmospheric air: abstract. G. Kassner. Am Soc M E J 37:119 F '15

**Pneumatic hammers**

- Air drill does duty as steam hammer in blacksmith shop. W. Bazore. 11 Eng Rec 72:270 Ag 23 '15  
 Barr pneumatic light forging hammer. 11 Ind Eng 14:422 N '14; Ry Age (Mech ed) 89:147-8 Mr '15  
 Pneumatic hammer. 11 diag Ry Age (Mech ed) 89:586-7 N '15

**Pneumatic pumps. See Air pumps****Pneumatic signals**

- Improvement in the operation of the pneumatic signal device. L. N. Armstrong and H. L. Sandhas. diag Ry R 56:613-21 My 8 '15

**Pneumatic tires. See Tires (automobile)****Pneumatic tools**

- Compressed air as source of power: advantages of pneumatic power tools. C. C. Phelps. Metal Work 82:822-4 D 25 '14  
 Cost of compressed air. T. F. Crawford. Ry Age (Mech ed) 89:364-5 J1 '15  
 Lubrication of pneumatic tools. Ry R 57:276-7 Ag 23 '15  
 Maintenance of pneumatic tools. 11 Ry Age (Mech ed) 89:413-15 Ag '15  
 Pneumatic plate flanging clamp. 11 Iron Tr R 56:271 F 4 '15  
 Pneumatic tie peeler. 11 Ry Age 59:342 Ag 20 '15  
 Tool-om-eter. 11 diag Int Marine Eng 20:186-7 Ap '15

See also Pneumatic hammers; Tamping machines

**Pneumatic tubes**

- Pneumatic grain elevating plant. 11 diag (supp) Engineer 120:361, 366 O 15 '15  
 Telegraph traffic and power plant for pneumatic tubes in post offices: abstract. A. B. Eason. Am Soc M E J 37:418-19 J1 '15  
 See also Waste removal

**Pneumatics**

- Action of an air jet on the surrounding air: abstract. T. Trüpel. Am Soc M E J 37:283-5 My '15

Can we locate the neutral zone in heated buildings? J. J. Blackmore. diag Heat & Ven 12:27-32 N '15

See also Air; Gases

**Pocatello, Idaho****Water supply**

- Regulation of water rates. Munic Eng 47:457-8 D '14

**Poisonous gases. See Gases, Asphyxiating****Poisonous plants**

- Cicutoxin; the poisonous principle in water hemlock (cicuta). C. A. Jacobson. 11 Am Chem Soc J 37:916-34 Ap '15

**Poland****Industries and resources**

- Mines and smelting works of Poland. 11 map Eng & Min J 99:146-8 Ja 16 '15

**Polar exploration. See Arctic exploration****Polaris**

- Azimuth observations on Polaris by daylight. R. V. R. Reynolds. Eng N 73:779 Ap 23 '15; Same. Eng & Min J 99:776 My 1 '15

**Polarity**

- Polarity reversal in synchronous converters. E. R. Shepard. diag Elec W 65:210-11 Ja 23 '15  
 Some transformer connections. G. Fox. diag Power 41:46-8 Ja 12 '15

**Polarity tester**

- New polarity tester. diag Engineer 118:550 D 11 '14; Same. Elec W 65:102 Ja 9 '15

**Poles**

- Corrugated iron protectors for trans-continental telephone line poles in Lake Humboldt, Nev. 11 Eng & Contr 44:27 J1 14 '15  
 Destruction of cement sidewalks by trolley poles. C. H. Fuller. Elec Ry J 46:832-3 O 16 '15  
 Determination of annual charge for ties, poles and fence posts. W. F. Goltra. Ry Age 58:1087 My 21 '15  
 Effect of preservatives on wood poles. F. L. Rhodes and R. F. Hosford. Elec Ry J 46:879 O 23 '15  
 Laws of deterioration of telegraph poles: abstract. F. Moll. Am Soc M E J 37:653-4 N '15  
 Preserving and reinforcing decayed wooden poles with concrete. Concrete Cem 6:19 Ja '15  
 Raising a 135-ft. flagpole with electric trucks. 11 Elec W 66:595 S 11 '15  
 Reinforcing metal poles. G. H. McKelway. Elec Ry J 46:365-7 Ag 28 '15  
 Reinforcing wood poles with railroad rails. J. Orchiston. diag Elec W 66:172 J1 24 '15  
 Reinforcing wood poles with steel channels. L. R. W. Allison. 11 Elec W 66:1307 N 27 '15  
 Repairing broken tubular iron poles. S. L. Foster. diag Elec Ry J 46:450-1 S 11 '15  
 Results obtained from the preservative treatment of telephone poles. F. L. Rhodes and R. F. Hosford. bibliog 11 Am Inst E El Pro 34:2343-37 O '15; Abstract. Elec W 66:1031 N 6 '15  
 Simplex pole jack. 11 Elec R & W Elec'n 67:683 O 9 '15; Elec W 66:827 O 9 '15  
 Speedy and inexpensive pole moving in San Francisco. S. L. Foster. 11 Elec Ry J 46:874 O 23 '15  
 See also Electric lines; Street lighting fixtures

**Poles, Concrete**

- Combined concrete poles and lighting standards. 11 Elec W 65:739-40 Mr 30 '15  
 Concrete lighting standards for bridges at Houston, Texas. W. W. Washburn. 11 diag Concrete Cem 6:123-4 Mr '15  
 Concrete lighting standards made attractive. L. R. W. Allison. 11 Eng N 74:1080 D 2 '15  
 Concrete poles in electric railway work. diag Ry R 57:487-9 O 16 '15  
 Concrete posts and poles; report to the American railway bridge and building association. G. H. Boyd. Ry R 56:360-2 Mr 18 '15  
 Concrete transmission-line poles. R. D. Coombs. 11 Elec W 65:341-3 F 6 '15  
 Concrete transmission poles. A. R. Holliday. 11 Elec W 66:237 J1 31 '15  
 Design and construction of a concrete idler stand. H. H. Hunter. diag Eng & Contr 44:413-14 N 24 '15  
 Electrolysis develops defects in but three out of 1500 concrete poles. H. G. Throop. Elec Ry J 45:294 F 6 '15  
 Manufacturing reinforced concrete poles or piles by rolling. diag Concrete Cem 6:265-6 My '15  
 Reinforced-concrete flag-pole at Panama. G. C. Dobson. 11 diag Eng N 74:452-3 S 2 '15  
 Reinforced concrete poles for railways. 11 diag Elec Ry J 44:1263 D 5 '14  
 Report on concrete poles for electric railways. Eng N 74:943 N 11 '15  
 Tall concrete poles have given nine years' service. 11 Eng Rec 71:550 My 1 '15



- Poles, Steel**  
 Climbers for structural-steel poles. *Il diag Elec Ry J 46:1049 N 20 '15*  
 Expanded metal poles replace two wooden pole lines. *Il Elec Ry J 46:1090-1 N 27 '15*  
 New type of steel pole. *Il Elec Ry J 46:32 J1 3 '15*  
 Steel pole strength per pound increased. *Il diags Elec Ry J 46:370 Ag 28 '15; Elec W 66:549 S 4 '15*
- Police**  
 Future of the police arm from an engineering standpoint; with discussion. H: Bruere. *Am Soc M E J 37:77-81 F '15; Same. Sci Am S 79:174-5 Mr 13 '15*  
 Municipal police departments—their relative size. A. L. Bostwick. *Munic Eng 48:141-2 F '15*  
 Sizes of police departments. *Munic J 38:315-16 Mr 11 '15*
- Police alarms**  
 Signal box records. P. I. Patton. *Munic J 39: 597-8 S 9 '15*
- Police patrol**  
 Motorized police department. K. C. Cardwell. *Il Munic J 38:316-17 Mr 11 '15*
- Polishing.** See Grinding and polishing
- Polishing wheels.** See Grinding and polishing
- Ponce de Léon, Juan, 1460?-1521**  
 First mining engineer of the western hemisphere. *Eng & Min J 99:274 F 6 '15*
- Pontianak rubber resin.** See Gums and resins
- Pontoon bridges**  
 Building bridges under fire. M. Wells. *Il Sci Am 111:456-7 D 5 '14*  
 Pontoon bridges and rafts. *Il Sci Am S 80:116 Ag 21 '15*  
 Pontoon railroad bridge across the Panama canal. *diags Ry R 56:82-4 Ja 16 '15*  
 Pontoon swing-bridge over the Panama canal. *Eng N 73:126 Ja 21 '15*  
 Swinging pontoon bridge carries railroad across Panama canal. *diags Eng Rec 71: 270-1 F 27 '15*
- Pontoons**  
 Pontoon for building Memphis bridge caissons. *diags Eng N 73:1037 My 27 '15*
- Pontoons, Concrete**  
 Reinforced concrete pontoon. O. Johnson. *Il Sci Am 111:505 D 19 '14*
- Poor farms.** See Almshouses
- Poorhouses.** See Almshouses
- Porcelain**  
 American-made porcelain ware for chemical laboratories. *Il Met & Chem Eng 13:461 J1 '15*  
 Electrical porcelain. I. Testing with a high-frequency oscillator. II. The problematical points of manufacture. III. Experiences and experimental investigations. E. E. F. Creighton. *Il Am Inst E E Pro 34:753-841 My '15; Abstract and discussion. Elec R & W Elec'n 66:395-6 F 27 '15; Elec W 65:528 F 27 '15; Discussion. Am Inst E E Pro 34:2622-45 N '15*  
 High-frequency oscillator for porcelain-insulator testing. *Il diag Elec R & W Elec'n 66: 880-1 My 8 '15*  
 Model porcelain factory in Klang. *Metal Work 34:586 N 5 '15*  
 Viscosity of porcelain bodies high in feldspar. A. V. Bleininger and C. S. Kinnison. *U S Bur Stand Tech Pa 50:1-7 '15; Abstract. Metal Work 34:526 O 22 '15*  
*See also Pottery*
- Porches**  
 Early American architectural details: Tucker-Rice porch, Salem, Mass. *Brickb 24:pl 1 Ja '15*
- Porphyry**  
 Porphyry coppers. P. E. Barbour. *Eng & Min J 99:1111-12 Je 26 '15*
- Portable buildings.** See Buildings, Portable
- Portable railroads.** See Railroads, Portable
- Portable schoolhouses.** See Schoolhouses, Portable
- Portable towers.** See Towers, Portable
- Portage silica company**  
 How the Portage silica co. prepares its product to meet the requirements of the foundry trade. *Il Foundry 43:36-7+ Ja '15*
- Porter, Rufus**  
 Founder of the Scientific American. R: Atwater. *Sci Am 112:493 My 29 '15*
- Portland, Maine**  
**Bridges**  
 Construction details of bridge across Portland harbor. *Il diag Eng N 74:865-8 N 4 '15*  
 Portland harbor bridge. *Il diags plan Eng N 74:834-9 O 28 '15*
- Portland, Oregon**  
 Portland's municipal testing laboratory. H. White. *Il Munic J 39:808-9 N 25 '15*  
**Bridges**  
 Interstate bridge over the Columbia river. E. E. Howard. *diags Eng N 73:1218-21 Je 24 '15*  
 Pacific highway interstate bridge over the Columbia river and its approaches between Vancouver, Wash., and Portland, Ore. E. E. Howard. *diags Eng & Contr 43:540-3 Je 16 '15*  
 Portland viaduct. W. B. Conant. *Il diags Munic J 39:499-503 S 30 '15*  
**Bureau of photography**  
 Municipal department for copying records, photographing pavements, sewers and other public works. H. M. White. *Il Munic J 39: 577-8 O 14 '15*
- Harbor**  
 Panama canal and the ports of the Pacific. A. J. Quigley. *Il map Eng M 48:808-11 Mr '15*  
**Rapid transit**  
 Effect of publicity on the jitney movement in Portland. F. W. Hild. *Elec Ry J 46:560-1 S 18 '15*  
 Traffic analysis and schedule planning at Portland. F. Cooper. *Elec Ry J 46:562-4 S 18 '15*
- Streets**  
 Portland street corner directories. *Munic J 39: 7 J1 1 '15*
- Water supply**  
 Method and cost of constructing and repairing submerged water pipe lines at Portland, Ore. D. D. Clarke. *diags Eng & Contr 42:538-42 D 9 '14*
- Portland cement.** See Cement
- Portland railway, light & power company**  
 Portland valuation brief filed. *Elec Ry J 46: 922 O 30 '15*
- Ports**  
 Development of port of Boston. *map Eng & Contr 43:sup28 Je 16 '15*  
 Panama canal and the ports of the Pacific. A. J. Quigley. *Il maps Eng M 48:493-7, 641-57, 808-26: 49:1-17 Js Ap '15*  
 Port development at Seattle. P. F. Whitham. *Il diags map Eng N 73:476-81 Mr 11 '15*  
 Port improvements along the Mississippi and Ohio rivers. *Eng N 73:1066-8 Je 3 '15*  
 To make Nottingham a port. *Sci Am S 79:342 My 29 '15*  
*See also Freight handling; Harbors; Piers; Terminals*
- Post office buildings**  
 Business principles in constructing public buildings. *Eng Rec 72:161 Ag 7 '15*  
 Heating equipment of federal building, Denver. *Il Metal Work 84:247-9+ Ag 20 '15*  
 Mechanical equipment of the Grand Central post office. H. T. Wade. *Il Sci Am 113:232-3 S 11 '15*  
 New post office, Washington, D. C. *Il Arch & Bldg 46:423-9 N '14*  
 New post office, Washington, D. C.; views. *Arch Rec 37:278-80 Mr '15*  
 Post office, New Orleans, La. J. G. Rogers. *Il Arch & Bldg 47:131-6 Ap '15*
- Postal rates**  
 In re third-class postage. R. H. Booth. *Inland Ptr 56:101 O '15*

**Postal service**

See also Mail handling; Parcel post; Railway mail service

**Germany**

German post office and the German army. A. Gradenwitz. *Il Sci Am* 113:25+ J1 3 '15

**Postal service, Military**

German post office and the German army. A. Gradenwitz. *Il Sci Am* 113:25+ J1 3 '15

**Posters**

Specimens of posters. Inland *Ptr* 54:656a-656h F '15

**Posts**

Constructing stair newel posts. C. L. Oakley. *diags Bldg Age* 37:71 Ag '15

See also Fence posts; Lamp posts

**Posts, Concrete**

B. H. & P. concrete sign and post plant. *diags Ry Age* 58:148-5 Je 18 '15

Concrete posts for grape trellis. *Il Bldg Age* 37:69 N '15

How concrete lamp-posts are made for Lincoln park, Chicago. G. T. Donoghue. *Il diag Eng N* 74:989 N 18 '15

See also Fence posts, Concrete

**Potash**

Agriculture in Germany and significant facts about potash. *Sci Am S* 80:167 S 11 '15

Business aspect of the kelp proposition. F. P. Dewey. *Sci Am S* 79:71 Ju 30 '15

Cushman-Coggeshall method for potash. G. W. Coggeshall. *Eng M* 49:578 J1 '15

Doing without Europe. *Sci Am* 112:157+ F 13 '15

Drilling costs in potash prospecting. E. E. Free. *Eng & Min J* 100:108-9 J1 17 '15

European war and potash supplies. T. J. Keenan. *Sci Am S* 79:86 F 6 '15

Extracting potash from salines of low potash content. *Eng & Min J* 100:324 Ag 7 '15

Feldspar as a possible source of American potash. A. S. Cushman and G. W. Coggeshall. *J Ind & Eng Chem* 7:145-51 F '15; Same. *Met & Chem Eng* 13:99-104 F '15

German and other sources of potash supply. C. H. Macdowell. *Am Inst Min E Bul* 93:103-14 F '15; Abstract. *Met & Chem Eng* 13:179 Mr '15; Discussion. *Am Inst Min E Bul* 101:1118-19 My '15

Investigation of sources of potash in Texas. W. B. Phillips. *Il Am Inst Min E Bul* 98:116-27 F '15

Possible source of potash. *Eng & Min J* 100:877 N 27 '15

Possible sources of potash in the United States. A. H. Rogers. *Met & Chem Eng* 13:387-8 Je '15

Potash deposits in Chile. S. Salcedo. *Eng & Min J* 100:218 Ag 7 '15

Potash from leucite. A. H. Rogers. *Eng M* 49:576-6 J1 '15

Potash from wood and plant ashes. H. Bradley. *diag Met & Chem Eng* 13:841-6 N 15 '15

Potash in Texas. J. A. Udden. *Eng M* 49:577 J1 '15

Potash situation. E. Hart. *J Ind & Eng Chem* 7:670-1 Ag '15; Excerpt (New process) *Eng N* 74:616 S 23 '15

Potash situation. J. W. Beckman. *Met & Chem Eng* 13:582 S 15 '15

Potash situation. S. H. Dolbear. *Met & Chem Eng* 13:481-2 Ag '15

Potassium salts; an economic geological study. E. M. Heriot. *Il maps Eng & Min J* 100:669-72, 712-14 O 23-30 '15

Producing potash in Utah. *Eng & Min J* 100:688-9 O 23 '15

Searles Lake (Cal.) patent protest. *Eng & Min J* 99:334-5 F 13 '15

Spanish potash deposits. *Eng & Min J* 100:262 Ag 14 '15

**Potassium**

Perchloric method of determining potassium as applied to water analysis. C. Scholl. *Am Chem Soc J* 36:2085-9 O '14

**Potassium ammonoargentate**

Action of potassium amide solution on silver amide. E. C. Franklin. *Am Chem Soc J* 37:852-5 Ap '15

**Potassium ammonobarate**

Potassium ammonobarate, ammonostrontiate and ammonocalciate. E. C. Franklin. *Am Chem Soc J* 37:2255-301 O '15

**Potassium ammonocalciate**

Potassium ammonobarate, ammonostrontiate and ammonocalciate. E. C. Franklin. *Am Chem Soc J* 37:2295-301 O '15

**Potassium ammonostrontiate**

Potassium ammonobarate, ammonostrontiate and ammonocalciate. E. C. Franklin. *Am Chem Soc J* 37:2295-301 O '15

**Potassium bitartrate. See Cream of tartar****Potassium carbonate. See Potash****Potassium chloride**

Potassium chloride concentration cells. D. A. MacInnes and K. Parker. *diags Am Chem Soc J* 37:1445-61 Je '15

Solubility of mixtures of sodium and potassium chlorides in solutions of hydrochloric acid. W. B. Hicks. *diag Am Chem Soc J* 37:844-7 Ap '15

**Potassium cyanide**

Blacksmith's use of borax and cyanide. *Eng & Min J* 99:1076 Je 19 '15

**Potassium dichromate**

Oxidation and reduction without the addition of acid; the reaction between ferrous sulfate and potassium dichromate. M. Neidle and J. C. Witt. *Am Chem Soc J* 37:2360-8 O '15

**Potassium iodate**

Oxidation of sulfides with potassium iodate. R. S. Dean. *Am Chem Soc J* 37:1134-7 Aly '15

**Potassium iodide**

Study of the system: water, potassium iodide and iodine at zero degrees. G. Jones and M. L. Hartmann. *Am Chem Soc J* 37:241-68 F '15

**Potassium permanganate**

Making up standard permanganate solution. H. E. Moyer. *Eng & Min J* 100:522 S 25 '15

**Potassium phthalate**

Acid potassium and acid sodium phthalates as standards in acidimetry and alkalimetry. W. S. Hendrixson. *Am Chem Soc J* 37:2352-9 O '15

**Potentiometers**

Alternating-current potentiometer; abstract. C. V. Drysdale. *diag Elec W* 65:1554 Je 12 '15

Leakage prevention by shielding, especially in potentiometer systems. W. P. White. *diags Am Chem Soc J* 36:2011-20 O '14

Potentiometers for thermoelectric measurements especially in calorimetry. W. P. White. *diags Am Chem Soc J* 36:1868-85 S '14

Testing of potentiometers. F. Wenner and E. Welbel. *Il diags U S Bur Stand Bul* 11:1-40 N 15 '14

**Pottery**

Pottery industry; report on the cost of production in the earthenware and china industries of the United States, England, Germany, and Austria. U S Bur For & Dom Com misc ser 31:1-709 '15; Excerpt. *Sci Am S* 79:263 Ap 24 '15

Probable effect of the war in Europe on the ceramic industries of the United States. A. S. Watts. U S Bur Mines Tech Pa 99:1-14 '15

See also Clay; Porcelain; Tiles

**Poultry feeders**

Automatic poultry feeder. *Il Sci Am* 113:49 J1 10 '15

**Poultry houses**

Constructing a poultry house. J. D. Griffen. *plans Bldg Age* 37:62-3 Ja '15

Million chicks to the acre; raising poultry on a manufacturing basis. M. Hastings. *Il Sci Am* 113:247+ S 18 '15

**Powder. See Explosives—Storage****Powder, Smokeless. See Smokeless powder****Powdered coal. See Coal, Pulverized****Power**

Hydro-electric power compared with steam; with discussion. R. P. Bolton. *Am Soc Heat & V E* 20:374-91 '14

Power formulas for machine tools. A. D. DuBois. *Elec W* 65:928-33 Ap 10 '15

**Power—Continued**

- Power requirements of ammonia compressors. W. N. McKee. Power 41:158-60 F 2 '15
- Selecting construction power-plant system. Eng N 74:965-7 N 18 '15
- Steam versus air for power tools. Metal Work 82:796-4 D 18 '14
- See also* Compressed air; Electric power; Engines; Force and energy; Horsepower; Hydroelectric power; Machinery; Mechanics; Mining engineering—Power; Pneumatic tools; Power cost; Power plants; Power transmission; Steam; Units; Water power
- Power cost**
- Cleveland's municipal electric light plant. *il* diags Munic J 28:869-75 Je 24 '15
- Controlling the cost of electricity. W. N. Polakov. Eng M 49:235-40 My '15
- ✓ Cost of a kilowatt-hour; explanation of terms and elements involved in power generation. A. F. Strouse. Eng M 48:278-80 N '14; Same. Eng & Contr 42:555 D 16 '14
- Cost of combination electric service; investigation at Calgary, Alberta. Elec W 65:1181-3 My 8 '15
- Cost of electric pumping for irrigation. *il* map Elec W 66:68-71 JI 10 '15; Same cond. Eng Rec 72:257-8 Ag 28 '15
- Costs in small industrial power plant. C. W. Thayer. Power 41:466-6 Ap 6 '15
- Costs of power relative to total manufacturing costs in various industries; abstract. H. E. McKensit. Ind Eng 14:468-9 D '14
- Decision by Oregon commission, with table of costs for different classes of consumers of the Hood River gas and electric company. Elec W 66:431 Ag 21 '15
- Diesel-engine central station at Winchester, Ind. T. Wilson. *il* Power 41:562-4 Ap 27 '15
- Diesel engine for the contractor—why not? H. D. Hammond. *il* Eng Rec 71:409-10 Mr 27 '15
- Distributing overhead expense. N. T. Ficker. Eng M 49:362-71 S '15
- Electrically operated contractor's plant for building Kenaico dam. A. W. Carroll. *il* Eng Rec 71:18-20 Ja 2 '15
- Electricity in grain elevators. H. E. Stafford. *il* diags Am Inst El E Pro 34:1087-1103 Je '15; Abstract. Elec W 66:90 JI 10 '15
- Electricity in implement manufacturing. W. J. Kyle. *il* Elec R & W Elec'n 67:97-101 JI 17 '15
- Former engineer of La Salle hotel defends his administration. J. E. Lawrence. Power 41:63-5 Ja 12 '15
- Gas and steam engines and the turbine. J. E. Johnson, Jr. Iron Age 95:626-9 Mr 18 '15; Same. Sci Am S 79:294-5 My 8 '15
- Gas-power plant of the Illinois glass co. at Alton. T. Wilson. *il* plan Power 42:252-6 Ag 24 '15
- German power-cost estimates. L. Schulte. Power 42:714 N 23 '15
- ✓ Graphic analysis of steam-electric power costs. J. Willmore. Elec W 66:189 JI 24 '15
- Holyoke gas and electricity. Munic J 38:258 F 25 '15
- How to select your prime mover. G. Fisk. Iron Tr R 57:569-72 + S 23 '15
- ✓ Hydroelectric development; with discussion. H. Flood, Jr. Elec W 65:1267-9 My 15 '15
- Multiplex cost and rate system. O. E. Goldman. Am Inst El E Pro 34:941-57 My '15; Discussion. 34:2662-5 N '15
- Operating costs for oil-engine installations. Elec W 66:305-7 O 9 '15
- Power costs in a tenant building. A. A. Winter. Power 41:408 Mr 23 '15
- Power with by-product recovery. T. R. Wolleston. Engineer 119:326-7 Ap 2 '15; Same. Sci Am S 80:42-3 JI 17 '15
- Reduction of power costs in a factory power plant. T. K. Roberts. diags Ind Eng 14:445-50 D '14
- ✓ Relative costs of steam and hydro-electric power. Power 41:246 F 16 '15
- Saving in Federal building plant, Chicago. Power 41:610-11 My 4 '15
- Selecting construction power-plant system. Eng N 74:965-7 N 18 '15
- Selling current on a small margin; a small water and steam plant. T. Wilson. *il* diags Power 42:498-501 O 12 '15
- Small isolated plant pays big dividends. T. Wilson. *il* Power 41:61-4 Ja 12 '15
- Small-tow distribution and management cost. E. A. Wright. Elec W 65:338-41 F 6 '15
- Steam versus electricity in a corset factory. Elec W 65:110 Ja 9 '15
- Uniform electric rates based on costs. H. D. Jackson. Elec W 66:236-7 JI 31 '15
- Why the isolated plant should win. H. D. Jackson. Power 40:846-7 D 15 '14
- Why the manufacturer prefers to use central station power. H. H. Holding. Elec W 65:1281-2 My 15 '15
- Power factor**
- Action of phase advancer in regulating power-factor of an induction motor. diags Elec W 66:191 JI 24 '15
- Investigation of dielectric losses with the cathode ray tube. J. P. Minton. *il* Am Inst El E Pro 34:1115-65 Je '15
- Power-factor as element of rates. F. Ghilardi. Elec W 66:410-11 Ag 21 '15
- Synchronous motors for power-factor correction. T. Schou. Elec W 66:1138-42 N 20 '15
- Power piping society**
- Standard power plant piping specification. Iron Age 96:388 Ag 12 '15
- Power plants**
- Accident prevention in power plants. Power 42:281-2 Ag 24 '15
- Analyzing the plant's condition. J. C. Hawkins. Power 41:239-40 F 16 '15
- Appearance as an element in power-plant value. E. D. Dreyfus. Power 41:138-9 Ja 26 '15
- Comparative steam and electric power layouts for a drainage pumping plant. plans Eng & Contr 42:412-14 O 28 '14
- Concrete-unit building construction at Cedars Rapids. *il* diags Eng N 73:675-7 Ap 8 '15
- Mechanical plant of the Equitable building. *il* plan Arch & Bldg 47:191-5 My '15
- Panama-Pacific exposition; power plant apparatus. F. R. Low. *il* Power 42:225-9 Ag 17 '15
- Power-plant equipment for Massachusetts institute of technology. Elec R & W Elec'n 67:854 N 6 '15; Same. Power 42:752-3 N 30 '15
- Power-station economics. E. J. Billings. Power 42:316-17 Ag 31 '15
- Pre-efficiency. G. F. Willis. Power 41:500-1 Ap 13 '15
- Preventing losses in factory power plants. S. J. H. White. Iron Age 95:777-9, 848-9 Ap 8-15 '15
- Recording power plant operations. J. C. Smallwood. *il* diags Eng M 49:318-36; 50:33-46, 262-75, 332-3 S-D '15
- Waste in the management of public utility power plants. F. W. Collins. Eng M 49:388-93 S '15
- See also* Boiler plants; Electric plants; Gas power plants; Hydroelectric plants; Solar power plants; Steam plants
- Accounting**
- Keeping power plant accounts. C. J. Mason. Colliery 35:585-7 Je '15
- Piping**
- See* Piping
- Power transmission**
- Factory drives. G. Thompson. Metal Ind n s 13:9-10 Ja '15
- Flow of energy. R. A. Philip. diags Am Inst El E Pro 34:455-84 Ap '15; Same. W Soc El J 20:444-72 My '15; Same cond. Power 42:352-5 S 7 '15; Abstract. Elec W 65:1035-6 Ap 24 '15; Discussion. W Soc El J 20:472-7 My '15
- New gasoline engine drive. Sci Am 112:288 Mr 27 '15
- Return-pipe compressed-air practice. F. Richards. Power 41:224-5 F 16 '15
- Steel-band power transmission; advantages over belt and rope shown in Germany. F. G. Broeker. Eng M 49:756-7 Ag '15
- See also* Belting; Chain gear; Compressed air; Electric transmission; Gearing; Hydraulic transmission; Machinery; Power plants; Pulleys; Rope driving; Shafting

**Praseodymium**

Revision of the atomic weight of praseodymium; the analysis of praseodymium chloride. G. P. Baxter and O. J. Stewart. *Am Chem Soc J* 37:516-36 Mr '15

**Praseodymium chloride**

Revision of the atomic weight of praseodymium; the analysis of praseodymium chloride. G. P. Baxter and O. J. Stewart. *Am Chem Soc J* 37:516-36 Mr '15

**Precious stones**

Identifying minerals and precious stones. *Sci Am S* 80:46 Jl 17 '15

**Testing**

Tables for the determination of gems and precious or ornamental stones without injury to the specimen. A. J. Moses. *Sch Mines Q* 36:199-233 Ap '15

**Precious stones, Artificial**

Imitation precious stones. *Sci Am S* 80:199 S 25 '15

**Precious stones, Synthetic**

Technical utilization of precious stones. *Sci Am S* 80:163 S 11 '15

**Premiums**

Trading stamps and premium legislation. E. J. Buckley. *Metal Work* 83:763 My 21 '15

Preparation of copy. See Manuscripts, Preparation of

Preserving. See Canning and preserving

Press. See Newspapers

Press congress of the world

Organisation. *Elec R & W Elec'n* 67:398 S 4 '15

**Pressboard**

Investigation of dielectric losses with the cathode ray tube. J. P. Minton. *Il Am Inst E E Pro* 34:1143-65 Je '15

**Presses**

Arbor and shaft straightening press. *Il Iron Age* 96:195 Jl 22 '15

British Portland cement making machinery; briquetting presses. *Il diag Engineer* 120:148-51 Ag 13 '15

Cleveland shell banding and nosing press. *Il diag Mach* 22:253-4 N '15

Dial feed attachment for large shells. *Il Iron Age* 96:1223 N 25 '15

Hydraulic presses versus power presses for the manufacture of cartridges and shells; abstract. W. Rodger. *Am Soc M E J* 37:512-13 O '15

Pneumatic press for banding shrapnel. *Il Iron Age* 95:1398 Je 24 '15

Sheet metal bending and forming press. *Il Iron Age* 96:1229 N 25 '15

Stoip power presses. *Il Mach* 21:1026 Ag '15

Toggle press with dwelling blankholder. *Il Iron Age* 95:1167 My 27 '15; *Iron Tr R* 56:1114-15 Je 3 '15

Two-stage combination drawing press. *Il diag Iron Age* 95:504-5 Mr 4 '15

Wheel press for pressing pantograph shoes and testing springs and hose. R. R. Potter. *Il Elec Ry J* 44:1257-8 D 5 '14

Zeh & Hahnemann percussion press. *Il Mach* 21:1019 Ag '15

See also Hydraulic machinery

Presses, Printing. See Printing presses

**Pressure**

Effect of pressure on the diver. *Il Sci Am* 113:61+ Jl 17 '15

Handy conversion table for low pressures. E. H. Peterson. *Power* 42:383 S 14 '15

See also Atmospheric pressure; Earth pressure; Wind pressure

**Pressure gages**

Differential gage for very small pressure differences. W. Masby, jr. *Il Eng N* 72:1214 D 31 '14

German apparatus for measuring pressure and velocity of gases; abstract. E. Stach. *diag Am Soc M E J* 37:715-16 D '15

Home-made pressure indicator for heating system. R. A. Langworthy. *diag Power* 42:725-6 N 23 '15

Inexpensive but accurate gage tester. F. W. Salmon. *Il Power* 42:552 O 19 '15

New condenser gage: the Scanes vacuum efficiency and absolute pressure gage. *diag Power* 40:877-8 D 22 '14

See also Manometers

Presswork. See Printing, Practical—Presswork

**Price cutting**

Another phase of the law of price cutting; manufacturer can refuse to sell price-cutter but combination of retailers cannot compel action. E. J. Buckley. *Metal Work* 83:685 My 7 '15

Bid cutter and the annual statement. C. Hopmann. *Metal Work* 83:224 F 5 '15

Committee's report on price maintenance. Horseless Age 35:199 F 10 '15

Cut price goods and restraint of trade. E. J. Buckley. *Metal Work* 83:577 Ap 16 '15

Important decision on the Clayton act. *Sci Am* 113:163-4 Ag 21 '15

Price cutting as viewed by the traveling salesman. J. K. Simpkins. *Metal Work* 83:433 Mr 19 '15

Price cutting is business philanthropy. P. F. Brandstedt. *Metal Work* 83:359 Mr 5 '15

Price-fixing decision of Illinois court. E. J. Buckley. *Metal Work* 84:475 O 8 '15

Three most important price-fixing cases now before the public—the Ford, Victor and Kellogg cases. E. J. Buckley. *Elec R & W Elec'n* 67:201 Jl 31 '15; Same. *Metal Work* 83:887 Je 18 '15

**Prices**

Business methods for the plumber and fitter; standard selling prices. W. A. Fink. *Dom Eng* 72:171-2 Ag 7 '15

Standard prices for standard services. W. E. Clow. *Metal Work* 83:254 F 12 '15

See also Price cutting; Railroads—Rates; Wages

Primary batteries. See Electric batteries

Prime movers. See Engines

**Princeton university**

Design and construction features of the Palmer memorial stadium, Princeton, N. J. *Il diag plan Eng & Contr* 43:472-5 My 26 '15

Palmer memorial stadium at Princeton university. *Il diag plan Eng N* 72:1184-7 D 10 '14

**Printers**

Efforts of a novice to become a printer. J. T. Elliott. *Il Inland Ptr* 54:769-74 Mr '15

Precautions for the health of printers. E. A. Boyle. *Inland Ptr* 55:787-8 S '15

Taking care of the apprentice. F. J. Donnelly. *Inland Ptr* 55:197 My '15

**Printing**

History of composing-sticks. W. Sells. *Il Inland Ptr* 54:839-40 Mr '15

Outgrowths of letterpress. G. Sherman. *Inland Ptr* 54:197-200, 248-6, 490-3, 625-30, 777-80; 55:42-7, 177-82, 321-7 N '14-Je '15

See also Advertisements; Blind—Printing and writing systems; Color printing; Compound words; Electrotyping; Embossing (typography); Lettering; Linotype; Paper; Photography; Plate printing; Posters; Printing machinery; Printing offices; Printing presses; Proofreading; Stereotyping; Textile printing; Typesetting; Typesetting machines

**Bibliography**

Literature of typography. H. L. Bullen. *Inland Ptr* 50:878-82, 836-41; 51:56-9, 214-6, 353-61, 518-20, 692-3, 857-8; 52:72-5, 232-5, 396-9, 555-7, 708-11, 878-5; 53:73-5, 236-9, 396-400, 555-8, 697-9, 860-4; 54:61-4, 219-22, 537-9, 676-8, 797-9; 55:60-2, 492-6, 635-8, 779-82; 56:60-4, 345-51 F '13-N '14, Ja-Apr, Jl-D '15

**Exhibitions**

Printing, advertising and allied trades exposition. *Il Inland Ptr* 55:547-50 Jl '15

**Ornaments**

Conventional and illustrative decoration. J. L. Frazier. *Il Inland Ptr* 54:801-4 Mr '15

Extent of decoration. J. L. Frazier. *Inland Ptr* 55:497-8 Jl '15

Proper use of initials. J. L. Frazier. *Inland Ptr* 55:499-502 Jl '15

## Printing—Continued

## Specimens

Announcements and invitations. Inland Ptr 55: 656a-656h Ag '15  
 Department of reset designs. Inland Ptr 56: 64a-64h O '15  
 Reset specimens. Inland Ptr 55:352a-352h Je '15  
 Specimens. J. L. Frazier. See monthly numbers of Inland printer  
 Suggestions for cards and tickets. Inland Ptr 54:800a-800h Mr '15

See also Advertisements; Blotters; Business cards; Christmas printing; Labels; Menu cards; Programs

## Study and teaching

Learning the printing trade in a newspaper office. W: H. Seed. II Inland Ptr 56:243-6 N '15

## China

Commercial press, limited, Shanghai, China. W: H. Seed. II Inland Ptr 56:373-5 D '15

## France

Literature of typography. H: L: Bullen. Inland Ptr 54:537-9, 616-8 Ja-F '15

## Great Britain

Literature of typography. H: L: Bullen. II Inland Ptr 54:797-9; 55:60-2, 492-6; 56:60-4, 845-51 Mr-Apr. JI, O, D '15

## India

Printing in India. Inland Ptr 56:194-5 N '15

## Printing, Practical

Creating a loss where profit is possible: problem of layout. C. M. Butler. Inland Ptr 54: 638-9 F '15

How to co-operate with the printer in the preparation of copy. J. T. Elliott. Inland Ptr 54:828-9 Mr '15

Printing and the care of printed stock. W. P. Baylie. II Am Gas Inst Pro 9:pt 2, 1708-38; Discussion. 1738-46 '14

Printing 1,000,000 transfers a day; the Third avenue railway system prints its own transfers at a net cost of 9 cents per 1000. II Elec Ry J 45:703-4 Ap 10 '15

Type-designs in imitation of engraved work. J. L. Frazier. Inland Ptr 55:363-4 Je '15

Use and misuse of panels. J. L. Frazier. Inland Ptr 54:373-8 D '14

Value of the preparation of copy. F. A. Kidd. Inland Ptr 55:622-3 Ag '15

See also Blotters; Ink; Labels; Printing trade; Programs; Proofreading; Typesetting

## Accounting

Composing-machines and cost-accounting. C: J. Schott. Inland Ptr 56:54 O '15

Monotype accounting problems. C. D. Bolinger. Inland Ptr 55:478-5 JI '15

## Costs

Cost and method. B. Daniels. See monthly numbers of Inland printer

Where to charge the wash-up. Inland Ptr 55: 523-4 JI '15

## Estimates

Estimating on blankwork. B. Daniels. Inland Ptr 55:303-5 S '15

Faculty of judgment. G. D. Crain, jr. Inland Ptr 55:338-5 D '15

How much profit? B. Daniels. Inland Ptr 55: 801-2 S '15

How to study an estimate. B. Daniels. Inland Ptr 55:567-8 Ag '15

## Imposition, etc.

Handy rule-case for the make-up. II Inland Ptr 56:402 D '15

## Presswork

More about make-ready. R. O. Vandercook. Inland Ptr 54:359 D '14

Old Bill on the make-ready problem. A. J. Clark. Inland Ptr 54:337-40 D '14

Position of forms on plate presses. F. L. Bush. Inland Ptr 55:766-7 S '15

Pressroom. See monthly numbers of Inland printer

Science of make-ready. H. W. Hacker. Inland Ptr 55:185-8, 329-33 My-Je '15  
 Where to charge the wash-up. Inland Ptr 55: 523-4 JI '15

See also Printing presses

## Spacing

Correct spacing of body-matter. J. L. Frazier. Inland Ptr 55:355-8 Je '15

Distribution of white space. J. L. Frazier. Inland Ptr 55:355-8 D '15

Lesson in spacing. J. L. Frazier. Inland Ptr 56:353-4 D '15

Printing from plates. See Plate printing

Printing ink. See Ink

## Printing machinery

Devices for automatically numbering checks, bonds, tickets, tags, etc., while being printed. Inland Ptr 54:344 Mr '15

Disposal of secondhand printing-office machinery. H. De Lisle. Inland Ptr 54:487-9 Ja '15

Electricity in magazine publishing. II Elec R & W Elec'n 66:105-7 Ja 16 '15

Electricity in printing plants. II Elec R & W Elec'n 66:351-5 My 8 '15

Electricity in the publishing business. II Elec R & W Elec'n 65:1069-72 D 5 '14

Use of electricity in a newspaper plant; motor and control equipment for production of New York times. II Elec W 65:1637-31 Je 19 '15

See also Linotype; Monotype; Printing presses; Typesetting machines

## Printing offices

Chew printing house, Camden, N. J. II plans Brickb 24:11-12 Ja '15

Commercial press, limited, Shanghai, China. W: H. Seed. II Inland Ptr 56:373-5 D '15

Modern printing-house construction. W. Essex. II Inland Ptr 54:564-8 Ja '15

Motor-driven plant of the Dallas News. A. C. Scott. II plan Elec W 65:462-5 F 20 '15

Use of electricity in a newspaper plant; motor and control equipment for production of New York times. II Elec W 65:1637-31 Je 19 '15

Western newspaper union plant in Chicago. T: Wilson. II plan Power 41:2-5 Ja 5 '15

See also Cambridge university press; Chapple publishing company

## Equipment

Financial view of overequipment. B. Daniels. Inland Ptr 55:100 Ap '15

What is overequipment? Inland Ptr 55:522 JI '15

## Management

After the cost system—specialization of equipment and product. J. B. Thompson. Inland Ptr 54:534-6 F '15

Efficiency in the small shop. H. Hillman. Inland Ptr 55:809-14 Ag '15

How much composing-room? B. Daniels. Inland Ptr 54:835-6 Mr '15

Inventory for printers. Inland Ptr 54:692-3 F '15

Methods of conserving cost in printing-offices. W: Sells. Inland Ptr 54:397-9 D '14

Office clerk problems—adjusting complaints. C: Fried. Inland Ptr 55:188-9 My '15

Office clerk problems—collections. C: Fried. Inland Ptr 56:186-8 N '15

Office clerk problems—relations with the salesman. C: Fried. Inland Ptr 55:620-1 Ag '15

Organizing a sales campaign. F. Ford. Inland Ptr 55:188-90 N '15

Printer and his business. L: H. Grieve. Inland Ptr 54:652-4, 817-18; 55:63-4 F-Apr '15

Stake in the business. G. D. Crain, jr. Inland Ptr 55:239-40 My '15

See also Printing trade

## Moving

Western newspaper union solves problem of moving its large plant without interrupting business. J. T. Elliott. II Inland Ptr 54:406-8 D '14

## Valuation

Values of printing offices. C: S. Brown. Inland Ptr 56:43-5 O '15

## Printing presses

Application of electric motors to printing presses. W: C. Yates. Am Inst EE Pro 34: 3018-23 D '15

**Printing presses—Continued**

- Electric motor in the printing industry. W. C. Yates. *Il Gen Elec R* 18:1139-42 D '15  
Electrically driven vacuum sheet-cleaner for cylinder presses. *Il Elec R & W Elec'n* 66: 175 Ja 23 '15  
Getting best service from printers' rollers. R. E. Haynes. *Inland Ptr* 55:676-7 Ag '15  
New type of rapid rotary printing-press. *Inland Ptr* 55:585 J1 '15  
Seventy years of inventions. *Sci Am* 112:516-17 Je 6 '15  
What causes the packing on a cylinder press to creep or bunch forward? W. S. Huson. *Inland Ptr* 55:350 Je '15

*See also* Printing, Practical—Presswork

**Printing telegraph.** *See* Telegraph, Printing

**Printing trade**

- Do your own printing business. E. Wolcott. *Inland Ptr* 56:199-200 N '15  
How to sell a catalogue. R. C. Fay. *Inland Ptr* 55:104-6 Ap '15  
Long price-list. *Inland Ptr* 54:501-2 Ja '15  
New field for the printer; advertising on paper wrappers. T. H. Stark. *Inland Ptr* 56: 45-7 O '15  
Peculiarities of the printing business. *Inland Ptr* 55:663 Ag '15  
Personal element in the printing business. W. E. Rudge. *Inland Ptr* 56:247 N '15  
Please wake up. W. R. Colton. *Inland Ptr* 54: 833-4 Mr '15  
Remedy for overequipment—better selling. F. Webster. *Inland Ptr* 54:387-8 D '14  
Small shop. C. H. Armstrong. *Inland Ptr* 54: 781-8 Mr '15  
Special prices on paper to printers. B. Hope. *Inland Ptr* 54:341-3 D '14

**Advertising**

- Advertising for printers. J. L. Frazier. *Inland Ptr* 54:513-16 Ja '15  
Making printing a sales force. I. S. Paull. *Inland Ptr* 55:668-70 Ag '15  
Printers' blotters. *Inland Ptr* 55:784a-784h S '15  
**Printometer**  
Demand indicators: maxicator and printometer types. *Il Munic J* 38:906 Je 24 '15  
**Prismatic compass.** *See* Compass, Prismatic  
**Prison labor.** *See* Convict labor  
**Prisons**  
Many jails in this country declared insanitary. *Il Dom Eng* 73:16-17 O 3 '15  
**Prisons, Military.** *See* Concentration camps  
**Private car lines**  
Private car lines not common carriers. *Ry Age* 58:1051-2 My 21 '15  
**Prizes.** *See* Rewards, prizes, etc.  
**Proctor (John C.) recreation center.** *See* Peoria, Illinois—John C. Proctor recreation center  
**Producer gas.** *See* Gas

**Productograph**

- Watching distant machines from a desk. H. T. Wade. *Il Sci Am* 112:161-2 F 13 '15

**Professional education**

- Education for professional success. S. H. Bun-  
nell. *Eng Rec* 71:688-9 My 29 '15  
Training for the municipal service. C. L.  
King. *Sci Am S* 79:118-19 F 20 '15; Same  
cond. with discussion. *Am Soc M E J* 37:98-  
101 F '15

**Professional ethics**

- Circular of advice relative to principles of the  
professional practice and the canons of  
ethics of architects. *Am Inst Arch J* 8:108  
Mr '15

*See also* Engineering ethics

**Profiling**

- Mechanical production of drop forging dies.  
E. K. Hammond. *Il Mach* 22:1-5 S '15  
Profile milling and grinding. E. Lea. *Il diag*  
*Mach* 21:821 Je '15  
Wilzin process for flat-ware manufacture. *Il*  
*Mach* 22:76-7, 80 S '15  
Wilzin process of flatware manufacture. *Il*  
*Metal Ind n s* 13:374-7 S '15

**Profit sharing**

- Industrial betterment. F. E. Cardullo. *Mach*  
22:183-4 N '15

- Is a profit sharer always a partner? E. J.  
Buckley. *Metal Work* 82:303 D 18 '14  
Making of men, motor cars and profits of the  
Ford motor company. O. J. Abell. *Il Iron Age*  
55:33-41+ Ja 7 '15  
Making the workmen happy. H. Whitehead.  
*Dom Eng* 72:33-4 J1 10 '15  
Model industrial village in Illinois town. I. M.  
Farbell. *Metal Work* 83:409 Mr 19 '15  
Profit sharing plan explained to the Federal  
commission on industrial relations. H. Ford.  
*Iron Tr* 11 56:234-5 Ja 28 '15  
Washington railway & electric company's  
profit-sharing checks. C. P. King. *Elec Ry*  
*J* 45:157-8 Ja 16 '15

**Programs**

- Specimens. *Inland Ptr* 55:496a-496h J1 '15

**Prohibition**

- Alcohol and inefficiency. *Eng & Min J* 99:461  
Mr 6 '15

**Projectiles**

- Aeroplane darts and fire darts. *Il Sci Am S*  
79:124 F 20 '15  
Field gun and aerial projectiles: construction  
of shrapnel, smoke, and searchlight shells  
and bombs for the use of aircraft. *Il Sci Am*  
111:452-3+ D 5 '14  
How rifle bullets fly. E. C. Crossman. *Il Sci*  
*Am* 113:24+ J1 3 '15  
Naval projectile supply. *Il Iron Age* 96:1186-7  
N 15 '15  
Rifling cannon. F. J. B. Cordeiro. *Sci Am S*  
79:334 My 22 '15  
Rifling of firearms. A. Keller. *diag Sci Am*  
*S* 79:277-8 My 1 '15  
Steel darts. *Sci Am* 112:156 F 13 '15  
Windage of shot. *Sci Am* 112:308 Ap 3 '15  
*See also* Ammunition; Bullets; Grenades;  
Shells; Shrapnel shells

**Manufacture**

- Grinding large shells and projectiles. C. O.  
Smith. *Il diag Iron Age* 95:446-7 F 25 '15  
Hydraulic presses versus power presses for  
the manufacture of cartridges and shells;  
abstract. W. Rodger. *Am Soc M E J* 37:613-  
13 O '15  
Machinery for the production of projectiles. *Il*  
*diag Engineer* 119:572-6, 599-602, 634-6;  
120:5, 116-17, 278, 358-9 Je 11-J1 2, 30, S 17,  
O 8 '15  
Machines for making projectiles. *Il Iron Tr*  
*R* 56:383-4+ F 18 '15  
Machining high-explosive shells. C. A. Tupper.  
*diag Iron Age* 96:806-9 O 7 '15  
Machining projectile shells. *Il diag Iron Age*  
96:1099-1100 N 4 '15  
Single-purpose chucking turret lathe brought  
out by the Cleveland crane & engineering  
company, Wickliffe, Ohio. *Il Iron Age* 96:873  
O 14 '15  
Three projectile machines. *Il Iron Age* 95:402-  
3 F 18 '15

**Projectiles, Photography of.** *See* Photography of  
projectiles

**Projection of light.** *See* Light projection

**Projectors.** *See* Light projection

**Promotion.** *See* Employees

**Pronunciation.** *See* Phonetics

**Proofreading**

- Copy and proofreading. F. H. Teall. *Inland Ptr*  
54:631-4 F '15  
Correction of grammar by proofreaders. F. H.  
Teall. *Inland Ptr* 54:776-7 Mr '15  
Printing and the care of printed stock. W. P.  
Baylie. *Am Gas Inst Pro* 9:pt 2, 1726-7 '14  
Proofreading and authorities. F. H. Teall.  
*Inland Ptr* 55:333-5 Je '15  
Proofroom. F. H. Teall. *See* monthly numbers  
of *Inland printer*  
Varying styles and proofreading. F. H. Teall.  
*Inland Ptr* 55:468-70, 614-16, 756-9; 56:58-9,  
202-3, 326-8 J1-D '15  
*See also* Compound words; Punctuation;  
Spelling

**Propane**

- Vapor pressures of propane, propylene and  
normal butane at low temperatures. G. A.  
Burrell and I. W. Robertson. *Am Chem Soc*  
*J* 37:2188-93 S '15

**Propellers**

- Comparison between the results of propeller experiments in air and water. A. W. Johns. *Engineer* 119:385-6 Ap 2 '15
- Design of small screw propellers. D. H. Jackson. *diag Int Marine Eng* 20:146-50 O '15
- Dyson chart system of propeller design. J. S. Maiseed. *diag Int Marine Eng* 20:74-5 F '15
- Negative slip of propellers. *Engineer* 120:265 S 17 '15
- Propeller blade layout. H. M. Adams. *diag Int Marine Eng* 20:35-7 F '15
- Recent tests on flow of water acted on by a propeller; abstract. *Flamm. Am Soc M E J* 37:559 S '15
- Revival of the reversible blade propeller. *Il diags Engineer* 119:295-7, 306 Mr 26 '15
- Theory of propulsion and the screw propeller. F. W. Lanchester. *Engineer* 119:335 Ap 2 '15
- Weights of solid four-blade propellers. L. A. Baier. *Int Marine Eng* 20:220 My '15

**Property**

- Reclaiming property after a transfer. E. J. Buckley. *Metal Work* 82:772 D 11 '14
- See also* Real estate; Sales

**Propylene**

- Vapor pressures of propane, propylene and normal butane at low temperatures. G. A. Burrell and L. W. Robertson. *Am Chem Soc J* 37:2188-93 S '15

**Prospecting**

- Exploration work on Cuyuna range. P. W. Donovan. *Iron Tr R* 57:534+ S 18 '15
- Prospecting for minerals in Ontario. J. A. Macdonald. *Eng & Min J* 99:1067-8 Je 19 '15
- Prospecting methods at Fairbanks. H. I. Ellis. *Il diags Eng & Min J* 99:805-10 My 8 '15
- Requirements for prospecting dredging ground in the Yukon. J. A. Macdonald. *Eng & Min J* 99:828-9 My 8 '15
- Sampling of churn-drill prospect holes. F. G. Moses. *diag Eng & Min J* 100:301-4 Ag 21 '15
- Wisconsin zinc district. H. C. George. *Il diags map Eng & Min J* 100:295-300, 341-4 Ag 21-28 '15

*See also* Assaying

**Proteins**

- Combination of protein with halogen acids. J. H. Long and M. Hull. *Am Chem Soc J* 37:1593-1606 Je '15
- Nitrogen-protein table. R. S. Callaway. *J Ind & Eng Chem* 7:161 F '15
- Origin of the humin formed by the acid hydrolysis of proteins. R. A. Gortner and M. J. Blish. *Am Chem Soc J* 37:1680-6 Je '15
- Presence of proteoses and peptones in soils. E. H. Walters. *J Ind & Eng Chem* 7:860-3 O '15
- Protein charts. A. Silverman. *J Ind & Eng Chem* 7:533-4 Je '15
- Studies on nitrated proteins: the conversion of fibroin into nitro-fibroin (fibroin-xanthoproteic acid). T. B. Johnson, A. J. Hill, and L. P. O'Hara. *Am Chem Soc J* 37:2170-8 S '15
- Studies on nitrated proteins: the determination of the structure of nitrotyrosine. T. B. Johnson and E. F. Kohmann. *Am Chem Soc J* 37:1863-84 Ag '15
- Studies on nitrated proteins: the identifications of 3-nitrotyrosine among the products of hydrolysis of nitrated fibroin. T. B. Johnson. *Am Chem Soc J* 37:2598-603 N '15
- Studies on nitrated proteins: the syntheses of 3, 5-dinitrotyrosine. T. B. Johnson and E. F. Kohmann. *Am Chem Soc J* 37:2164-70 S '15
- Utilization of ingested protein as influenced by undermastication and overmastication. L. F. Foster and P. B. Hawk. *Am Chem Soc J* 37:1847-61 My '15

**Proteolysis**

- Acid ratio: a new method for determining the proteolytic strength of germinated grain in technical analysis. C. A. Nowak. *J Ind & Eng Chem* 7:858-9 O '15

**Providence, Rhode Island****Public buildings**

- Civic architecture in Providence. *Am Inst Arch J* 3:386-7 S '15

**Public works**

- Harbor development for Providence, R. I. plan *Eng & Contr* 43:sup21 Je 30 '15

**Water supply**

- Water-supply improvements for Providence. *Eng N* 74:669 S 30 '15

**Pruning**

- Timely suggestions for the pruner of ornamental and shade trees. J. J. Levison. *Il Am For* 21:931-2 S '15

**Prussian blue. See Cyanogen****Przemysl**

- Recapture of Przemysl. *Il Sci Am* 113:251 S 18 '15

**Psychoanalysis**

- Psychoanalytic movement: its services in the prevention of insanity. J. J. Putnam. *Sci Am* S 78:391, 402 D 19-26 '14

**Psychology**

- Modern psychology; the present study of character and temperament. J. Jastrow. *Sci Am* S 80:306-7 N 13 '15

*See also* Animal intelligence; Color sense

**Psychology, Experimental**

- Study of animal and human behavior. L. K. Hirschberg. *Il Sci Am* 112:491-2 My 29 '15

**Psychology, Pathological**

- Mental tests of dementia. B. Hart and C. Spearman. *Sci Am* S 80:206-8 S 25 '15

- Psychoanalytic movement: its services in the prevention of insanity. J. J. Putnam. *Sci Am* S 78:391, 402 D 19-26 '14

**Psychrometers**

- Measurements for the household. *Il U S Bur Stand Circ* 55:114-17 '15

**Public accountants. See Accountants, Public****Public buildings**

- Operating data in connection with federal buildings under control of the Treasury department. N. S. Thompson. *Heat & Ven* 12: 13-17 J1; 17-20 Ag '15

*See also* Almshouses; Baths, Public; Capitol buildings; Library architecture; Municipal buildings; Post office buildings; Prisons; Public comfort stations; Public works; Schoolhouses

**Public comfort stations**

- Bandstand and comfort station. *Il plan Bldg Age* 37:67-8 N '15
- Comfort station for Springfield, Massachusetts. *Il plan Metal Work* 83:228+ F 5 '15
- New Boston comfort station. W. B. Conant. *Il Munic J* 39:473 S 23 '15
- New public comfort station in Cincinnati. *Il plan Metal Work* 83:430-2 Mr 19 '15
- Planning public comfort stations. *Metal Work* 83:542 Ap 9 '15
- Plumbing in Oakwood park comfort station, Lorain, O. *Il plan Metal Work* 84:235-6 Ag 20 '15
- Plumbing in small park comfort station. *Il plan Metal Work* 83:155-6+ Ja 22 '15
- Public-comfort station built in Salt Lake City, Utah. S. Q. Cannon. *Il Eng N* 73:937 My 13 '15
- Public comfort station, Dallas, Tex. J. Boll. *Il Dom Eng* 70:41 Ja 9 '15
- Public comfort station in Dallas, Texas. *Metal Work* 83:249-50 F 12 '15
- Public comfort station now under construction in Springfield, Mass., at a cost of twenty-four thousand dollars. H. L. Sprague. *Il plan Munic J* 38:218-19 F 18 '15
- Sanitary equipment of Monrovia, California. *Il plan Metal Work* 84:362+ S 17 '15

**Public health**

- American public health association, 42d annual meeting. *Munic J* 39:483-4+ S 23 '15

- Plumbing and its relation to public health. W. C. Groeniger. *Metal Work* 83:415-16+ Mr 19 '15

*See also* Building laws; Disinfection and disinfectants; Dust prevention; Factory sanitation; Hookworm disease; Housing problem; Military hygiene; Physical examinations; Plumbing laws and regulations; Public comfort stations; Railroads—Sanitation; Refuse and refuse disposal; Safety devices and

**Public health—Continued**  
measures; Sanitary engineering; Sanitation; School hygiene; Sewage disposal; Street cleaning; Water pollution; Water supply; also names of cities, subheads Sanitary affairs and Sewerage

**Public health boards.** See Health boards

**Public health laws**

New York city sanitary code. Metal Work 83: 348 Mr 5 '15

Removal of dead animals in cities. A. L. Bostwick. Munic J 38:64-5 Ja 21 '15

State control of water-supply and sewerage in Kansas. Eng N 73:209 F 4 '15

See also Building laws; Factory laws; Heating—Laws and regulations; Plumbing laws and regulations; Sewerage—Laws; Ventilation—Laws

**Public lands**

United States mining statutes annotated; reservations, rights of way, withdrawals. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1159-66, 1138-93, 1388-94 '15

**Public offices**

See also Public service

**Public schools**

Master mechanics to teach in public schools. W: Wirt. Metal Work 83:841 Je 11 '15

**Public service**

Business men and public service. Ry R 55:688-90, 716-18, 775-7; 56:93-5, 127-9, 193-4, 207-8 D 5-12, 26 '14, Ja 10-23, F 6-13 '15

Government's business. It needs regulation by business men. Ry R 55:746-8 D 19 '14

See also Municipal employees

**Public service commissions**

Capable men as public commissioners. Eng & Contr 43:2 Ja 6 '15

Commission regulation. Elec Ry J 45:810 Ap 24 '15

Continuity of policy and experienced personnel necessary for service boards. Eng Rec 72: 170-1 Ag 7 '15

Engineers and public-service commissions. Eng N 74:247-8 Ag 5 '15

Engineers as members of public service commissions. C: H. Ledlie. Eng N 73:547-8 Mr 13 '15

Illinois utilities commission and the water works companies. C. G. Bennett. Am Water Works Assn J 2:382-9 Je '15

New York commission lacks power to increase rates beyond legislative maximum. Elec Ry J 46:126 Jl 17 '15

New York commissions. Elec W 65:375 F 6 '15

New York, New Jersey and New Hampshire state commission reports. Ry Age 58:138-9 Ja 22 '15

Publicity work of public service commissions. Elec Ry J 44:1240-3 D 5 '14

Qualifications of public service commissioners. Ry Age 59:244-5 Ag 6 '15

State commissions with jurisdiction over electrical utilities; map. Elec W 65:1597 Je 19 '15

State regulation of municipally owned plants. C. M. Larson. Am Water Works Assn J 2:515-37 S '15

To get the best men for commissioners. G: W. Anderson. Ry Age 57:1198 D 25 '14

Work of the commissions. Elec Ry J 45:5-6 Ja 2 '15

Work of the Illinois utilities commission; with discussion. R. M. Feustel. W Soc E J 19:965-78 D '14

See also New York public service commission; Public service corporations—Regulation

**Public service corporations**

Constructive policy for public service corporations. C: Day. Eng M 48:599-603 Ja '15

International engineering congress; report of electrical and related sessions. San Francisco, Sept. 20-25. Elec R & W Elec'n 67: 617-18 O 2 '15

M. T. Cooke finds fault with utilities. Elec W 65:755-6 Mr 20 '15

Oklahoma gas, electric & street railway association 4th annual convention. Elec W 65: 1340 My 22 '15

Public service. T. N. Vail. Elec R & W Elec'n 66:534-5 Mr 20 '15

Waste in the management of public utility power plants. F. W. Collins. Eng M 49:888-93 S '15

See also Electric service companies; Express companies; Franchises; Gas companies; Government ownership; Municipal ownership; Public service commissions; Railroads; Street railroads; Telegraph; Telephone companies; Water companies

**Accounting**

Ancient and modern accounting for public utilities. E. A. Pratt. Am Water Works Assn J 2:371-81 Je '15

Neglected phases of accounting. H: R. Hatfield. Elec Ry J 46:799-802 O 16 '15

Rents in public utility accounting. J: Bauer. J Account 20:21-7 Jl '15

Work of public service accountants. H. S. Swift. Elec Ry J 44:1298 D 12 '14

See also Electric service companies—Accounting; Gas companies—Accounting; Waterworks—Accounting

**Advertising**

Co-operative power customers' display at Hartford. Il Elec W 65:303 Ja 30 '15

**Finance**

Factors involved in establishing service, charge and rate of return of public utilities. O. E. Norman. Am Gas Light J 102: 263, 267-9 Ap 26 '15

Financing problems of public utilities companies. W: H. Hodge. Am Gas Light J 102: 215, 218-19 Ap 5 '15

Financing public utility properties. A. Cooke. Am Gas Light J 103:154-6 S 6 '15

Investment banker and the engineer. C. A. Hobeln. Assn Eng Soc J 54:243-57 Je '15

**Franchises**

Modern franchise for a public service corporation. C: C. Brown. Munic Eng 48:89-93 F '15

Public service corporation and the municipality; with discussion. J. Logan. Boston Soc C E J 2:223-59 Je '15

**Law**

Maine public utilities act. Elec W 65:68 Ja 2 '15

Rights of railroad stockholders; minority report. Ry R 56:667-8 My 15 '15

**Public relations**

Address at mid-year dinner. C. L. Allen. Elec Ry J 45:280 F 6 '15

Influence of good-neighborliness; the public utility as a human institution. Il Elec W 65: 941-3 Ap 10 '15

Large questions of public policy before the electrical industry. W. W. Freeman. Elec W 65:16-17 Ja 2 '15

Mixing as an asset of public utility business. H. S. Cooper. Elec Ry J 46:842-3 My 1 '15

Pointed paragraphs on public policy. Elec W 64:1254 D 26 '14

Public service and publicity. N. C. Kingsbury. Elec Ry J 45:223-6; Discussion. W. C. Ely; E. G. Connette. 46:216-17 Ja 30 '15

See also Electric Railroads—Public relations; Electric service companies—Public relations

**Rates**

Basing rates upon cost of service. Elec R & W Elec'n 66:61-2 Ja 9 '15

Fair interest on investment in public utilities. H. J. Davies. J Account 19:34-45 Ja '15

Same cond. Elec Ry J 44:1287-9 D 12 '14

Public versus the public service corporation. H: D. Jackson. Eng M 49:402-9 Je '15

Rates different not necessarily discriminatory. Am Gas Light J 103:335 N 22 '15

State regulation of municipally owned plants. C. M. Larson. Am Water Works Assn J 2:522-37 S '15

Value of service and cost of service in rate-making. C. M. Jansky. Elec R & W Elec'n 66:80-1 Ja 9 '15

See also Electric power—Rates; Gas rates; Telephone—Rates; Water rates



## Public service corporations—Continued

## Regulation

- Address before the Indiana gas association. A. C. Blinn. Am Gas Light J 102:177-8 Mr 22 '15
- Application of the theories of public regulation to the management of utilities. D. A. Graham. Am Water Works Assn J 2:324-43 Je '15
- Charges, connections and extensions; order of California railroad commission. Am Gas Light J 103:188-9 S 20 '15
- Competition in small-city utility operation. B. A. Brackenbury. Elec W 66:4-5 Jl 3 '15
- Conditions that will encourage hydroelectric development. J. A. Britton. Elec W 64:1236-8 D 26 '14
- Dual ownership of public utilities in Alsace. M. A. Jewett. Munic Eng 49:65-8 Ag '15
- Effect of the war on regulation of public utilities. N. T. Guernsey. Elec W 65:12-14 Ja 2 '15
- Fair treatment of public utilities. A. B. Leach. Elec Ry J 46:670-1 O 2 '15
- Fundamental planks in a public-utility program. D. F. Wilcox. Eng N 73:1215 D 17 '14
- Idaho power and light company granted a certificate of convenience and necessity. Elec R & W Elec'n 66:249-50 F 6 '15
- Municipal co-operation in public utility management. P. J. Kealy. Am Inst E E Pro 34:2263-74 O '15; Same cond. Elec Ry J 46:861-3 O 23 '15
- Municipal regulation of public utilities. J. H. Roemer. Am Gas Light J 103:97-100 Ag 16 '15
- National Bureau of standards and standards for public utilities. H. T. Wade. Eng M 49:340-51 My '15
- New York second district: filing of schedules. Elec R & W Elec'n 66:298 F 13 '15
- Permitting and limiting public-utility competition. Eng N 73:690 Ap 8 '15
- Public utilities work of the Bureau of standards. Elec W 64:1187-8 D 19 '14
- Public versus the public service corporation. H. D. Jackson. Eng M 49:402-9 Je '15
- Regulation. W. J. Calhoun. Am Gas Light J 102:244-54 My 10 '15
- Regulation of public utilities. L. A. Busby. Elec Ry J 46:1081-4 N 27 '15; Abstract. Elec R & W Elec'n 67:986 N 27 '15
- Results of the war for public service commissions to consider. H. Floy. Elec W 65:15-16 Ja 2 '15
- Right of appeal in New Hampshire. Elec W 65:1485-6 Je 5 '15
- Shall American industry be socialized? F. C. Henderschott. Am Ind 16:29-33 Jl '15
- State control of city-owned utilities much needed. Eng N 74:658-9 S 30 '15
- State regulation. W. J. Norton. Elec R & W Elec'n 66:632-3 Ap 3 '15
- State regulation of municipally owned plants. C. M. Larson. Am Water Works Assn J 2:515-37 S '15
- See also Electric service companies—Regulation; Gas companies—Regulation; Railroads and state; Waterworks—Regulation

## Taxation

- Increased taxation in Wisconsin and its effect upon public service companies. R. Gruhl. Elec W 65:859 Ja 23 '15; Same. Elec Ry J 45:234 Ja 30 '15
- Should utilities be assessed by public service commissions? F. N. Fletcher. Elec Ry J 46:445 S 11 '15
- Tax assessments on utility properties subject to review in New Jersey. Elec R & W Elec'n 66:128 Ja 16 '15

## Valuation of property

- Appellate court of the state of New York and the question of allowances for paving over mains in valuation work. J. W. Alvord. Am Water Works Assn J 2:465-81 S '15; Same cond. Eng & Contr 43:532-5 Je 16 '15; Discussion. Am Water Works Assn J 2:482-93 S '15
- Appraisal of overhead costs. H. P. Gillette. Elec W 66:41-2 Jl 3 '15

Court decisions showing present value to be the only value for rate making purposes. H. P. Gillette. Eng & Contr 43:302 Mr 31 '15

- Depreciation and valuation for rate making. L. H. Haney. J Account 19:344-51 My '15
- Depreciation in public utilities. Elec W 66:743 O 2 '15
- Engineers as arbiters of public equity and justice. W. M. Daniels. Eng Rec 70:623-4 D 5 '14
- Fair interest on investment in public utilities. H. J. Davies. J Account 19:34-45 Ja '15; Same cond. Elec Ry J 44:1287-9 D 12 '14
- Fair overhead charges allowed; Bronx gas and electric company. Elec Ry J 46:831 O 16 '15
- Foundation principles of utility valuation, with special application to resettlement plans. B. J. Arnold. Eng N 74:859 O 28 '15
- Franchise value. Elec R & W Elec'n 65:1180-2 D 19 '14
- Fundamentals of appraisal and valuation. M. E. Cooley. Elec Ry J 46:913 O 30 '15
- Idaho court overrules depreciation deduction. Eng Rec 72:480-1 O 16 '15
- In rate-fixing by commission, should depreciation be deducted from plant valuation? A. C. Humphreys. Am Gas Inst Pro 9:pt 2, 1557-82; Discussion. 9:pt 3, 1638-82 '14
- Neglected phases of accounting. H. R. Hatfield. Elec Ry J 46:799-802 O 16 '15
- New Jersey decision. H. S. Welsh. Elec Ry J 45:57 Ja 2 '15
- Pacific gas & electric company valuation methods. Elec W 65:569-70 F 27 '15
- Papers on public utility valuation; abstracts. J. W. Alvord; J. H. Gandolfo. Elec Ry J 44:1252 D 5 '14
- Portland valuation brief filed. Elec Ry J 46:922 O 30 '15
- Principles of valuation. J. W. Alvord. Eng Rec 70:677 D 19 '14
- Sandpoint, Idaho, water company case. Elec R & W Elec'n 67:897-8 N 13 '15
- Sinking funds in rate valuations. W. H. Lawton. J Account 19:191-7 Mr '15
- Utilities bureau convention, Philadelphia, 1915; valuation conference. Eng N 74:1002-3 N 18 '15; Elec Ry J 46:980-5, 1031-4 N 13-20 '15; Elec R & W Elec'n 67:939-41 N 20 '15; Elec W 66:1135-9 N 20 '15; Eng Rec 72:643-5 N 20 '15; Munic J 39:788-9 N 18 '15
- Utility appraisals. G. B. Saunders. Elec Ry J 45:981-5 My 23 '15
- Valuation of Cincinnati utility. Elec W 64:1088 D 5 '14
- Valuation of franchises. Elec Ry J 44:1331-2 D 19 '14
- Valuation of public utilities discussion by Am. Inst. E. Elec R & W Elec'n 67:568-9 S 25 '15
- Valuation of public utilities for rate-making purposes. C. C. James. J Account 20:173-8 S '15
- Why appraisal is not valuation. G. S. Binckley. Eng Rec 72:515-17 O 23 '15
- See also Electric railroads—Valuation; Railroads—Valuation; Street railroads—Valuation; Waterworks—Valuation
- Public speaking. F. L. Hutchinson. Eng Rec 72:672 N 27 '15
- Public utilities. See Public service corporations
- Public utility association of West Virginia West Virginia managers convene. Elec W 66:1182-3 N 27 '15
- Public works
- Alternate specifications for public work are legal. D. T. Pierce. Eng N 74:1048-50 N 25 '15
- Commission plan for control of public works. Eng N 73:1186-8 Je 17 '15
- Direct control over construction materials is feature of 100-mile Winnipeg aqueduct. Il Eng Rec 71:594-6 My 8 '15
- Engineers and the New York state constitutional convention. Eng N 73:602-3 Mr 25 '15
- Engineers discuss changes in New York state constitution. Eng Rec 71:382 Mr 20 '15
- How shall patented materials or processes on public works be handled? D. B. Luten; S. Whinery. Eng Rec 72:546-9 O 30 '15
- How shall patented materials or processes on public works be handled? G. C. Warren; S. Whinery. Eng Rec 72:511-12 O 28 '15

**Public works—Continued**

Results of task work without bonus in cleaning filter sand at Philadelphia. S. E. Thompson. Eng Rec 70:608-9 D 5 '14; Same cond. with discussion. Am Soc M E J 37:102-4 F '15; Same cond. (Efficiency study of filter cleaning). Munic J 38:353-4 F 23 '15

See also Contracts, Letting of; Municipal engineering; Public buildings; Roads

**Publicity**

American iron and steel institute presidential address. E. H. Gary. Iron Tr R 57:849-51 O 28 '15; Same. Iron Age 96:985-8 O 28 '15

Engineer and publicity, with special reference to the publicity work of the Cleveland engineering society; abstract. C. E. Drayer. Eng & Contr 42:374-5 D 33 '14; Abstract, with discussion. Am Soc M E J 37:88-92 F '15

Future of the engineering profession. A. J. Himes. Eng Rec 72:663 N 27 '15

Interesting the non-electrical public. F. H. Gale. Il Elec W 66:1184-6 N 27 '15

Practical value of publicity to the water works man. S. C. Hadden. Am Water Works Assn J 2:359-66; Discussion. D. R. Gwinn. 2:366-70 Je '15

Publicity for engineering work. M. L. Cooke; C. E. Drayer; S. H. Ankeney. Eng Rec 70:644-8 D 13 '14

Publicity for the engineer and its importance; excerpts. C. E. Drayer. Eng N 73:1018-19 My 27 '15; Eng Rec 71:718-19 Je 5 '15

Publicity necessary for city manager success. W. Miller. Eng Rec 72:666 N 27 '15

Publicity work of public service commissions. Elec Ry J 44:1240-3 D 5 '14

See also Advertising; Electric railroads—Public relations; Public service corporations—Public relations; Railroads—Public relations; Street railroads—Public relations

**Publishing houses**

Equipment of large publishing house; power plant, interior wiring and special features of the Curtis publishing company's building, Independence square, Philadelphia. Il Diags plans Elec W 65:905-11 Ap 10 '15

Hill building, New York. Il Arch & Bldg 46:447-50 N '14

Hill building: special building design for special use. Il diags plans Eng N 72:1241-8 D 24 '14

New home of the Engineering and mining Journal. Il Eng & Min J 98:1143-4 D 26 '14

Philadelphia publishing house; Farm Journal building. Il plan Brickb 24:201 Ag '15

See also Printing offices

**Pulleys**

Cork insert pulley. Il Eng M 49:supl-2 S '15

Cutter automatic cutout pulleys. Il Elec R & W Elec'n 66:1129 Je 12 '15

Designing cone pulleys: graphical method of finding the radii. R. C. H. Heck. Mach 21:291-3 D '14

Grinding cone pulleys at the Norton plant. H. W. Ault. Il diags Mach 22:33 S '15

Grinding crowned pulleys. H. W. Dunbar. Il diags Mach 21:893-4 J1 '15

Making the Gilbert wood pulley. Il Mach 21:483-6 F '15

Recent tests of the effective force between driving belt and pulleys; abstract. A. Friedrich. Am Soc M E J 37:551-5 S '15

See also Belting; Rope driving

**Pullman company**

Investigation of wages paid by Pullman company. Ry Age 58:786 Ap 9 '15

**Pumping**

See also Mine pumping; Pumping stations; Pumps

**Cost**

Comparing triple-expansion and centrifugal pumps. G. M. Peek; G. H. Gibson. Eng N 74:1044-5 N 25 '15

Comparison of pumping costs. C. F. Herington. Ry Age 59:108-9 J1 16 '15

Cost of drainage pumping in southern Louisiana. C. W. Okey. Eng N 74:733-5 O 14 '15

Cost of electric pumping for irrigation. Il map Elec W 66:68-71 J1 10 '15; Excerpts. Eng Rec 72:257-8 Ag 28 '15

Cost of pumping for irrigation. G. E. P. Smith. Eng & Contr 41:148-50 Ag 25 '15

Electric pumping at Fairmount, Ind.; comparison of service by reciprocating steam pumps and by electrically driven centrifugal pumps. J. A. Randolph. Munic J 39:356-8 S 2 '15

Electricity for irrigation pumping. Il Elec R & W Elec'n 66:1022-8 Je 5 '15

First cost and cost of operation of irrigation pumping plants. H. D. Hanford. Eng & Contr 43:491-2 Je 2 '15

How low fixed charges favor centrifugal pumps. G. H. Gibson. Il plan Eng N 74:886-8 N 4 '15

Increase in operating costs due to pumping, Minidoka irrigation project. Eng & Contr 43:348 Ap 14 '15

Irrigation pumping in the coast states. Il map Elec W 65:1399-1408 My 29 '15

New well water supply of Galveston, Texas. H. G. Wheaton. Il Eng & Contr 44:385-6 N 17 '15

Saving \$1,500 a month by using electric pumps. E. E. Yensel. Il diags Elec W 66:400-1 Ag 21 '15

Study of a water supply by pumping for concrete road construction. plan Eng & Contr 43:467-8 Aly 26 '15

Water service tests. P. M. La Bach. Ry Age 59:536 S 17 '15

**Pumping engines**

Defective valves cause slippage in pumping engines. A. A. Wood. Il Eng Rec 71:598 Aly 8 '15

Evolution of the waterworks pumping engine. W. B. Bryan. Engineer 118:579-1 D 11 '14

Famous Cornish pump. diags Power 42:124-5 J1 27 '15

Pumping engines, Madras waterworks. Il Engineer 119:188 F 19 '15

Service of a fuel oil engine in a railway pumping station. Il Ity Age 58:1444-5 Je 18 '15

**Testing**

Utility of pump slip tests in maintaining efficiency of pumping engines. H. D. Havill. Eng & Contr 44:293 O 13 '15

Pumping machinery. See Pumping engines; Pumps

**Pumping machinery, Electric**

Automatic control of pumps to boost city water pressure. Il Elec W 66:643 S 18 '15

Automatic electric control of pumps. G. J. Kirchgasser. Il diags Power 41:811-14 Je 13 '15

Cost of electric pumping for irrigation. Il map Elec W 66:68-71 J1 10 '15; Same abr. Eng Rec 72:257-8 Ag 28 '15

Electric motors supplant steam for water pumping at Wellesley, Mass. Elec R & W Elec'n 67:147-8 J1 24 '15

Electric pump wagon. R. B. Pilbinton. Il Munic Eng 49:28-9 J1 '15

Electrically driven, non-vibrating pumps. Il Elec W 66:488 Ag 28 '15

Electrically driven water-works plant. E. M. Ivens. Il plan Power 42:198-200 Ag 10 '15

Electrically operated pumping outfit. Il Elec R & W Elec'n 67:684 O 9 '15; Elec W 66:827 O 9 '15

Electricity for irrigation pumping. Il Elec R & W Elec'n 66:1023-8 Je 5 '15

Electricity for municipal pumping. Il Elec R & W Elec'n 67:653-6 O 9 '15

Electricity replaces steam in drainage pumping. Il Elec W 66:87 J1 10 '15

Irrigating the land of little rain. S. M. Kennedy. Il diags Elec W 65:1471-4 Je 5 '15

Irrigation in the Wenatchee valley. A. Gunn. Il Elec W 65:1560-3 Je 12 '15

Minneapolis dredging pump operates electrically. Il Eng Rec 72:136-7 J1 31 '15

Motor-driven deep-well pumping head. Il Elec R & W Elec'n 67:248 Ag 7 '15

Motor-driven house pump. Il Elec W 66:1220 N 27 '15

New vertical electric condensation return pump. Il diags Heat & Ven 12:53-4 Ag '15

**Pumping machinery, Electric—Continued**

Pumping and loading sand; with tables of costs. A. E. Smith. *Il Elec W* 66:467-8 Ag 28 '15  
 Saving \$1,500 a month by using electric pumps. E. H. Jensch. *Il diag Elec W* 66:400-1 Ag 21 '15

**Pumping stations**

Baltimore sewage-pumping plant. W. O. Rogers. *Il Power* 41:76-8 Ja 19 '15  
 Boston's new sewage pumping station. W. B. Conant. *Il Munic J* 39:775-6 N 18 '15  
 California pumping station of the W. Gloucester water co. *Il diags Engineer* 119:162-4 F 13 '15  
 Comparative steam and electric power layouts for a drainage pumping plant. plans Eng & Contr 42:412-14 O 28 '14  
 Concrete rings, superimposed, sunk to form San Antonio pump pit. W. W. Hay. *Il diag Eng Rec* 71:741-2 Je 13 '15  
 Constructing Passaic valley pumping station. *Il plan Munic J* 38:341-4 Mr 18 '15  
 Constructing pumping station in unbraced cofferdam formed by outside walls. *Il plans Eng Rec* 71:292-4 Mr 6 '15  
 Dominguez central-station irrigation system. C. B. Loomis. plan map Eng N 74:540-1 S 16 '15  
 Drainage pumping plant with variable-speed drive. *Il diags Eng N* 74:531-3 S 23 '15  
 Electric sewage-pumping station, Audubon, N. J. *Il diag plan Eng N* 73:73 Ja 14 '15  
 Electricity in waterworks plants. L. E. Darling. Elec R & W Elec'n 66:869-71 My 8 '15  
 Fairview sewage-pumping station. T. Wilson. *Il plan Power* 41:286-7 Mr 2 '15  
 Indianapolis pumping station designed for continuous service. Eng Rec 71:208 F 13 '15  
 Irrigation by pumping at Del Rio, Texas. A. Potter. *Il diags plan Eng & Contr* 43:66-71 Ja 27 '15  
 Largest electric drainage pumping plant. A. M. Shaw. Eng N 74:804-5 O 21 '15  
 Low-lift centrifugal pumps at Akron will operate under unusually varied conditions. F. A. Barbour. *Il Eng Rec* 71:580-1 Mr 5 '15  
 Method employed in connecting suction tunnel to pumping station wet well without draining the latter. H. W. Clausen. Eng & Contr 42:421-5 N 4 '14  
 Motor-operated pumping installation to handle flood water in Boston. *Il Elec W* 66:1206-7 N 27 '15  
 Municipal pumping stations of Detroit. T. Wilson. *Il Power* 41:160-8 F 2 '15  
 Ornamental pumping station. *Il Munic J* 39:190 Ag 5 '15  
 Performance of Diesel engine pumping equipment of the Appleton, Wis., water works. *Il plan Eng & Contr* 44:244-6 S 29 '15  
 Progress in Kansas in pumping for irrigation. H. B. Walker. Eng & Contr 43:233-4 Mr 17 '15  
 Pumping California crude oil. C. P. Bowie. *Il Eng N* 74:1068-71 D 2 '15  
 Sewage pumping plants; brief descriptions of plants operating in seventy-five cities. Munic J 38:858-62 Mr 18 '15  
 Sewage pumping, screening and sterilizing station at Daytona, Fla.; specifications. plans Eng & Contr 45:525-7 D 2 '14  
 Turbine-driven water-works plant, Charlotte-town, P. M. I. C. O. Thomas. *Il Power* 42:504-5 O 12 '15  
 Types and properties of deep well pumps. G. W. Bissell. Eng & Contr 44:33-4 Jl 14 '15  
 Variable-speed pumping plant for a drainage district. diags Eng N 74:918-19 N 11 '15  
 Whitton pumping station of the Ipswich corporation waterworks; abstract. C. W. S. Oldham. Engineer 118:588 D 18 '14  
*See also* Pumping—Cost; Pumps; Water supply engineering; Waterworks

**Pumps**  
 Automatic control of step-bearing oil pumps. *Il diag Elec W* 65:297 Ja 30 '15  
 Automatic pumping equipment. F. J. Vevla. plan Elec R & W Elec'n 66:1060 Ja 5 '15  
 Bit of pump history. Colliery 35:389 F '15  
 Capacity and power of hydraulic pumps. R. A. Lachmann. Power 41:89 Ja 19 '15

Choice of pumps for city water works. J. E. Craig. Eng & Contr 43:171 F 24 '15  
 Control for boiler-feed pumps and piping connections. plan Elec W 66:918-19 O 23 '15  
 Dayton power pump. *Il Power* 41:165-6 F 2 '15  
 Deane high-pressure pump. *Il Power* 42:501-2 O 12 '15  
 Deep well pumps. *Il Metal Work* 84:223 Ag 12 '15  
 Duplex pumps. A. L. Haas. Int Marine Eng 20:363-4 Ag '15  
 Efficiencies of mine pumps. P. E. Barbour. Eng & Min J 99:1031-2 Je 12 '15  
 Electrically operated house pump. *Il Elec R & W Elec'n* 67:635 O 2 '15  
 Equipment and methods in largest refrigeration system. C. H. Bromley. *Il diags Power* 40:914-16 D 29 '14  
 Influence of disk friction on turbine pump design. F. zur Nedden. diags Am Soc M E J 37:538-44 S '15; Abstract. Int Marine Eng 20:866 Ag '15; Discussion. Am Soc M E J 37:545-6 S '15  
 Low-lift screw pumps installed at Terrebonne, La. *Il diag Eng N* 74:813 Ag 12 '15  
 Luitwieler double-acting triplex pump. *Il Power* 41:750 Je 1 '15  
 Men and machinery of the Comstock—the combination shaft. G. W. Dickie. *Il Eng & Min J* 98:990-4 D 5 '14  
 Mine pumping; comparison of steam and electric pumps. C. Legrand. Am Inst Min E Bul 105:1929-35 S '15  
 Multistage centrifugal and Cornish pumps in Chapin mine. L. E. Ives. *Il diag Eng & Min J* 99:867-8 My 15 '15  
 New diaphragm pump. *Il Met & Chem Eng* 13:456-6 Jl '15  
 Notes on elevator pumps. T. J. Rogers. diags Power 41:741-2 Je 1 '15  
 Pump regulator. A. H. Bullard. diag Power 41:754 Je 1 '15  
 Pumping for irrigation studies. Eng & Contr 44:96 Ag 4 '15  
 Pumps for city water works. J. E. Craig. Munic Eng 40:69-70 Ag '15  
 Reciprocating-pump slippage. M. K. Baer. Power 40:927-8 D 29 '14  
 Saving in the pump room. W. E. Dixon. diag Power 41:171-2 F 2 '15  
 Screw pumps for the drainage works at New Orleans. *Il plans Engineer* 119:460-1 My 7 '15  
 Selecting a pump for general service. C. L. Hubbard. diags Power 41:198-9 F 9 '15; Discussion. 41:345-6, 519-20 Mr 9, Ap 13 '15  
 Selection of deep well pumping machinery. D. A. Graham. Eng & Contr 43:104-6 F 3 '15; Same. Engineer 130:164-5 Ag 13 '15; Abstract. Eng N 73:184 Ja 28 '15; Abstract. Eng Rec 71:204-5 F 13 '15  
 Slippage of reciprocating pumps. T. B. Hyde. Power 41:468-9 Ap 6 '15  
 Suction lift for pumps. D. F.iegelman. Power 42:150-1 Ag 3 '15  
 To calculate a pump's duty. Power 42:81 Jl 20 '15  
 Two ways of piping steam pumps. W. H. Wakeman. diags Dom Eng 72:138 Jl 31 '15  
 Viking rotary pump. *Il diag Munic J* 39:597-8 O 14 '15  
 Water level in air chambers. G. A. Weindel. diags Power 42:623 N 2 '15  
 Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:264-6 Ag 28 '15  
*See also* Air lifts; Air pumps; Pumping stations; Tire pumps

**Cost of operation**

Economical duty of pumps. F. H. Carter. Eng Rec 70:618-20 D 5 '14

**Repair**

Accident to pump plunger and how repaired. G. H. Wallace. diags Power 41:691 My 18 '15

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Blast-furnace plant auxiliaries and general arrangement. J. E. Johnson, jr. diags Met & Chem Eng 13:378-8 Je '15

**Pumps, Centrifugal—Continued**

- Boiler-feed pump discussion. B. N. Everett. Power 42:424 S 21 '15
- Centrifugal boiler-feed pumps. A. L. Covill; W. L. Durand. Power 42:276 Ag 24 '15
- Centrifugal boiler-feed pumps. C. C. Richardson. Power 42:182 J1 27 '15
- Centrifugal boiler feed pumps. C. O. Sandstrom. Power 42:275-6 Ag 24 '15
- Centrifugal boiler-feed pumps. J. E. Kamps. Power 42:693-4 N 16 '15
- Centrifugal boiler-feed pumps. T. D. Hayes. Power 42:847 S 7 '15
- Centrifugal crude-oil pump. A. B. Morrison, jr. Power 41:454-5 Mr 30 '15
- Centrifugal dredging pump applied to production of sand and gravel. *Il* Concrete Cem 7: 191-2 N '15
- Centrifugal mine-pumps on the Rand; with cost data. E. G. Isod and A. P. Rouillard. *diags Eng & Min J* 99:1115-16 Je 26 '15
- Centrifugal pump became air bound. F. Mc-Morrow. Power 41:854 Je 22 '15
- Centrifugal pump for thick liquors. *Il* Met & Chem Eng 13:512 Ag '15
- Centrifugal pump from standpoint of central station. T. D. Rose. *Il* Elec R & W Elec'n 67:7-12 J1 3 '15
- Centrifugal pumps for boiler-feed service. E. S. Adams. Power 40:984-5 D 29 '14
- Centrifugal pumps for fire engine service; abstract. A. Schacht. *Am Soc M E J* 37:408-9 J1 '15
- Characteristic curves of centrifugal pumps; with discussion. F. W. Greve, jr. *W Soc E J* 19:776-87 O '14; Abstract. *Am Soc M E J* 37: 59-60 Ja '15
- Comparing triple-expansion and centrifugal pumps. G. M. Peek; G. H. Gibson. *Eng N* 74:1044-5 N 25 '15
- Concrete patches repair centrifugal dredging pump. W. L. Grace. *Il* Eng Rec 72:147 J1 31 '15
- Condition gage for centrifugal pumps. G. M. Peek. *diag Eng N* 72:1268 D 24 '14
- Direct-driven and geared centrifugal pumps, Ross pumping stations, Pittsburgh. *Il* Eng N 73:134-5 Ja 21 '15
- Dredge pump handles ashes. O. D. Havard. *diag Power* 41:580 Ap 27 '15
- Effect of temperature on capacity of centrifugal pumps. J. Howard. Power 41:406 Mr 23 '15
- Effect of velocity head on centrifugal pumps. S. Wilcox. Power 42:487 O 5 '15
- Hill-Tripp centrifugal pump. *Il* *diags Power* 41:634-6 My 11 '15
- Kingsford double-flow pump. *Il* Power 41:85-6 Ja 19 '15
- Largest centrifugal pump. *Il* *Sci Am S* 79:37 Ja 16 '15
- Low-lift centrifugal pumps at Akron will operate under unusually varied conditions. F. A. Barbour. *Il* Eng Rec 71:580-1 My 8 '15
- Multistage centrifugal pumps. *Il* *diag Colliery* 35:410-14 Mr '15
- Priming a centrifugal pump. E. M. Ivens. *Il* *diags Power* 41:380-2 Je 29 '15
- Priming a centrifugal pump. J. E. Poche. *diags Power* 41:550 Ap 20 '15
- Priming a centrifugal pump. J. F. Jones. *diags Power* 41:294 Mr 2 '15
- Priming centrifugal pumps. C. A. Bunting. *diag Power* 42:275 Ag 24 '15
- Southwark-Rateau centrifugal pumps. *Il* *diag Colliery* 35:495-7 Ap '15
- Steam-turbine-driven centrifugal pumps of the Toronto water works. *Il* Eng & Contr 43:543-9 Je 23 '15
- Various sizes, types, services and drives of centrifugal pumps. *Il* *Munic J* 39:857-8 D 2 '15

**Cleaning**

- Cleaning a centrifugal pump. *Colliery* 35:260-1 D '14

**Testing**

- High duty obtained from small booster pumps. *Eng Rec* 72:79-80 J1 17 '15
- How low fixed charges favor centrifugal pumps. G. H. Gibson. *Il* plan Eng N 74:886-8 N 4 '15
- New graving dock at South Shields. *Il* *diag plan Engineer* 120:154-6, 158 Ag 13 '15

- Salt solution method used for testing centrifugal pump. E. D. Moses. *Il* Eng Rec 72:137-8 J1 31 '15
- Single-stage centrifugal pumps. E. B. Wilson. *Il* *diags Colliery* 35:366-70 F '15
- Test of booster pumps. *Il* Power 41:338 Mr 9 '15
- Test of centrifugal motor-driven pumps. S. S. Rumsey and W. F. Schwedes. *diags plans Am Inst Min E Bul* 94:2613-35 O '14; Abstract. *Am Soc M E J* 36:0214 N '14; Discussion. *Am Inst Min E Bul* 100:902-9 Ap '15
- Testing small centrifugal pumps. A. A. Wood. *diag Power* 41:616 My 4 '15
- Testing small centrifugal pumps. M. R. Blish. *diags Power* 41:370-3 Mr 16 '15
- Testing small centrifugal pumps. R. L. Daugherty. Power 41:551-2 Ap 20 '15
- Water-supply booster pumps; Roseland station, Chicago. *Il* *diag Eng N* 73:744-5 Ap 15 '15

**Pumps, Gas**

- First large American-built Humphrey pump. C. C. Trump. *Il* *diags Power* 40:767-70 D 1 '14; Same. Eng N 73:154-8 Ja 28 '15; Abstract. *Ind Eng* 15:26-7 Ja '15
- Humphrey pump: recent developments. C. C. Trump. *Il* *diags Sibley J* 80:55-9 N '15
- Irrigation by pumping at Del Rio, Texas. A. Potter. *Il* *diags plan Eng & Contr* 43:66-71 Ja 27 '15; Same abr. Eng Rec 71:596-8 My 8 '15

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- Large multiple punching machine. *Il* Iron Age 96:291 Ag 5 '15
- Multiple hand punch. J. Leafstrom. *diag Mach* 21:747 My '15
- Safety feed increases production of punch press. *Il* Iron Age 95:1333-4 Je 17 '15
- Spacing table in the structural shop: equipment in Fort Pitt bridge works. G. P. Thomas. *Il* Iron Age 95:139-41 Ja 14 '15
- Sub-press for blanking mica insulators. W. C. Betz. *diags Mach* 21:407-8 Ja '15
- Yoke riveting and punching machine. *Il* Iron Age 95:1398 Je 24 '15

**Punctuation**

- Parenthetical clauses. W. P. Root. *Inland Ptr* 55:477-8 J1 '15
- Punctuating quotations. F. H. Teall. *Inland Ptr* 56:381 D '15
- Varying styles and proofreading. F. H. Teall. *Inland Ptr* 55:614-16, 756-9; 56:58-9, 202-3 Ag-N '15

**See also Compound words****Purchasing**

- Broad field of the purchasing agent. E. C. Church. Eng M 49:420-1 Je '15
- Buying suggestions made by successful men. Metal Work 83:423-6 Mr 19 '15
- Fuel-supply contracts and the progress of more scientific methods of purchase and control in America and Europe. J. B. C. Kershaw. Met & Chem Eng 13:393-6 Je '15
- Interesting and important law about buying goods. E. J. Buckley. Elec R & W Elec'n 67:335 Ag 21 '15
- Judicious buying of plumbing materials. Metal Work 83:59-60 Ja 1 '15
- Philosophy of correct purchasing. E. C. Church. Iron Age 95:1008-9 My 6 '15
- Purchasing agent and high-class product. W. H. Morse. Eng M 49:333-5 Je '15
- Purchasing and distributing supplies in Cleveland. A. R. Callow. *Il* *Munic J* 39:391-4 S 9 '15
- Purchasing for scattered factories. H. L. Evans. Iron Age 95:283-8 F 4 '15
- Purchasing supplies for the Panama canal. F. C. Boggs. Iron Age 96:1180-2, 1226-7 N 18-25 '15
- Records for the purchasing department. H. A. Russell. Iron Age 96:308-9 Ag 5 '15
- Systematic purchase and care of mill supplies. E. C. Church. Textile World 49:207-9 My '15
- See also Inspection

**Pycnometer**

New form of pycnometer for liquids. P. B. Davis and L. S. Pratt. *diag Am Chem Soc J* 37:1199-1200 My '15

**Pyrehellometer**

Solar radiation. C. G. Abbot, F. E. Fowle and L. B. Aldrich. *Sci Am S* 80:258-9 O 23 '15

**Pyridine**

Salts of acridine, pyridine and quinoline. L. H. Cone. *Am Chem Soc J* 36:2101-10 O '14

**Pyrimidines**

Researches on pyrimidines: alkylation of 2-mercaptopyrimidines. T. B. Johnson and H. W. Haggard. *Am Chem Soc J* 37:177-83 Ja '15

Researches on pyrimidines: new methods of synthesizing 2-ketopyrimidines and their sulfur analogs. T. B. Johnson and A. W. Joyce. *Am Chem Soc J* 37:2151-54 S '15

Researches on pyrimidines: pyrimidine aldehydes and their biochemical interest. T. B. Johnson and L. H. Cretcher, jr. *Am Chem Soc J* 37:2144-51 S '15

Researches on pyrimidines: synthesis of 4-phenylcytosine. T. B. Johnson and E. H. Hemingway. *Am Chem Soc J* 37:378-83 F '15

Researches on pyrimidines: synthesis of the pyrimidine nucleoside, 4-hydroxymethyluracil. T. B. Johnson and L. H. Chernoff. *Am Chem Soc J* 36:1742-7 Ag '14

Researches on pyrimidines: the synthesis of 4-hexyluracil and its relationship to uracil-glucoside. T. B. Johnson. *Am Chem Soc J* 36:1891-9 S '14

**Pyrite**

Cave deposit. G. J. Young. *diag Econ Geol* 10:186-90 F-Mr '15

Grono copper and pyrites mines of Norway. A. D. Udhany. *il map Eng & Min J* 99:889-92 My 23 '15

Pyrite in coal measures. Colliery 35:251 D '14

Pyrite smelting. E. D. Peters. *Eng & Min J* 98:1184-5 D 26 '14

Pyrites in 1914. *Eng & Min J* 99:148 Ja 16 '15

Pyritic smelting at Mount Lyell. R. Sticht. *Met & Chem Eng* 13:116-18 F '15

Pyritic smelting; discussion. *Am Inst Min E Bul* 100:739-61 Ap '15

Results of some co-operative work on determination of sulfur in pyrites. H. C. Moore. *J Ind & Eng Chem* 7:634-6 JI '15

Rotary kilns for desulphurization and agglomeration. S. B. Doak. *Am Inst Min E Bul* 105:2061-6 S '15; Same. *Iron Age* 96:574-6 S 9 '15

**Pyrogallol**

Reagents for use in gas analysis; alkaline pyrogallol. R. P. Anderson. *diag J Ind & Eng Chem* 7:587-96 JI '15

**Pyroligneous acid. See Acetic acid****Pyrometers and pyrometry**

Base metal pyrometer couples. *Mach* 21:727 My '15

Characteristics of radiation pyrometers. G. K. Burgess and P. D. Foote. *il diag U S Bur Stand Bul* 12:90-178 O 28 '15; Abstract. *J Fr Inst* 179:493-5 Ap '15

Finding the transformation points in steel. E. F. Lake. *il Mach* 21:711-14 My '15

High-resistance pyrometers. *Power* 42:56 JI 13 '15

Machine that measures the heat of stars. *il Sci Am* 113:49 JI 10 '15

Measurement of the temperature of molten metals. C. R. Darling. *Engineer* 118:611 D 25 '14

Measuring high temperatures by melting of metallic salts. *il Elec W* 65:124-5 Ja 9 '15; *Elec Ry J* 45:106 Ja 9 '15; *Foundry* 43:39 Ja '15; *Heat & Ven* 12:54 Ja '15; *Horseless Age* 35:40 Ja 6 '15; *Iron Age* 94:1491 D 31 '14; *Ry Age (Mech ed)* 89:46-7 Ja '15; *Iron Tr R* 56:430 F 25 '15

Multiple-type recording instrument for pyrometers. *il Met & Chem Eng* 13:643 S 15 '15

New high-resistance pyrometer instruments. *il Elec R & W Elec'n* 66:1068-9 Je 5 '15

Pyrometers for shop use. J. M. Johnson. *diag Mach* 21:550-3 Mr '15; Same. *Sci Am S* 80:156-8 S 4 '15

Radiation pyrometers; sources of error in the Féry and Thwing. G. K. Burgess and P. D. Foote. *Iron Age* 96:196-7 JI 22 '15

Recent progress in pyrometry. C. R. Darling. *Eng & Min J* 100:515 S 25 '15

Sentinel pyrometers and paste and their uses. *il Met & Chem Eng* 13:193-3 Mr '15

Tapalog, a new multiple record pyrometer recorder. *il Met & Chem Eng* 13:260-1 Ap '15; *Iron Age* 95:609 Mr 18 '15; *Elec W* 65:871 Ap 3 '15; *Power* 41:541 Ap 20 '15

Testing and repairing pyrometers. J. Lucas. *il Power* 41:712-14 My 25 '15

See also Micropyrometers

**Pyrophoric alloys**

Court of appeals decision in the pyrophoric alloy suit. *Met & Chem Eng* 13:145-6 Mr '15

**Pyrophyllite**

Alunite and pyrophyllite in triassic and jurassic volcanics at Kyuquot Sound, British Columbia. C. H. Clapp. *diag Econ Geol* 10:70-83 Ja '15

## Q

**Quantity surveying**

Better estimating and contract methods as advocated by the American institute of quantity engineers. G. A. Wright. *Assn Eng Soc J* 54:168-9 Ap '15

Comment on cost of quantity surveys of buildings and a proposed survey guarantee. W. K. Palmer. *Eng & Contr* 43:518-19 Je 9 '15

Estimating contracts by quantity survey. G. A. Wright. *Metal Work* 83:502-4 Ap 2 '15

Estimating curves for standard bridges of the Illinois highway department. G. F. Burch. *il diag Eng & Contr* 43:123-6 F 10 '15; Same cond. *Eng Rec* 72:171-2 Ag 7 '15

How quantity competition can be eliminated. H. M. Saumenig. *Eng Rec* 72:566 N 6 '15

Is the quantity system necessary? J. T. Tubby, jr. *Am Inst Arch J* 3:177-9 Ap '15

Qualifications of a quantity surveyor. *Bldg Age* 37:50-2 Mr '15

Quantity system. G. A. Wright. *Am Inst Arch J* 3:38-9 Ja '15

Quantity system of estimating. A. W. Joslin. *Bldg Age* 37:49-52 S '15

Quantity system of estimating. D. S. Ballantine. *Bldg Age* 37:41 JI '15

Quantity system of estimating; an American method compared with the London system. A. G. Duke. *Bldg Age* 37:85-6 My '15

Report of committee of the Engineers' club of St. Louis. *Assn Eng Soc J* 54:8-11 Ja '15

**Laws and regulations**

St. Louis law on quantity surveying. *Eng N* 73:382-3 F 11 '15

St. Louis ordinance governing quantity surveyors. *Eng & Contr* 43:187 Mr 3 '15

**Quarries and quarrying**

Cart for rock quarries. G. B. Wilson. *il Eng & Min J* 99:365 F 20 '15

Electrical equipment of the Vermont marble company. J. Liston. *il Gen Elec R* 18:1015-25 N '15

Electricity in marble quarrying. *il Elec R & W Elec'n* 67:983-6 N 27 '15

Electricity in stone quarries and asphalt plants. *il Elec R & W Elec'n* 67:315-18 Ag 21 '15

Modern rock-crushing plant. P. K. Yates. *il plans Eng N* 73:582-5 Mr 25 '15

Primer on explosives for metal miners and quarrymen. C. E. Munroe and C. Hall. *diag U S Bur Mines Bul* 80:63-71 '15

Quarrying slate for structural purposes. *il Metal Work* 84:446-6 O 1 '15

Safety in stone quarrying. O. Bowles. *il U S Bur Mines Tech Pa* 111:1-46 '15

See also Blasting; Building stones

**Quartz**

Absorption, reflection, and dispersion constants of quartz. W. W. Coblentz. *U S Bur Stand Bul* 11:471-81 My 10 '15

Quartz veins in lamprophyre intrusions. J. F. McLennan. *Eng & Min J* 99:11-13 Ja 2 '15

**Quartz lamps.** See Electric lamps, Mercury vapor  
**Quebec (city)**

### Bridges

Building the new Quebec bridge: the world's largest truss span. *Il Iron Tr R* 56:562-3 Mr 18 '15  
Design of the main shoes of the new Quebec bridge. *Il diags Engineer* 118:527-8 D 4 '14  
Erection of new Quebec bridge. H. P. Borden. *Il Eng Rec* 71:80-1 Ja 16 '15  
Erection progress on the Quebec bridge. *Il Eng & Contr* 44:170-1 S 1 '15  
Erection traveler, new Quebec bridge. H. P. Borden. *Il plans Eng N* 73:417-22 Mr 4 '15  
New methods evolved in building world's largest bridge; Quebec erection. *Il Eng Rec* 72:96-100 J1 24 '15  
Progress of erection of the new Quebec bridge. *Il plate (supp) Engineer* 120:416-17 O 29 '15  
Progress of the new Quebec bridge. *Il plan Engineer* 119:101-3 Ja 29 '15  
Provision for traction stresses in Quebec bridge. C. A. Norton. *diags Eng Rec* 71:492-3 Ap 17 '15  
Quebec bridge camp and yards. *Il plan Eng N* 74:748-9 O 14 '15  
Quebec bridge work in 1915. *Il Eng N* 74:473-5 S 2 '15  
Work on the new Quebec bridge during the first erection season. H. P. Borden. *Il Eng N* 73:1-4 Ja 7 '15

**Quicksilver.** See Mercury

**Quincy, Illinois**

### Water supply

New water filtration plant. W. R. Gelston. *Il diag Am Water Works Assn J* 2:416-52 Je '15; Same. *Munic Eng* 48:297-8 My '15; Discussion. *Am Water Works Assn J* 2:452-4 Je '15

**Quinine**

Quinine in the treatment of gaseous gangrene. K. Taylor. *Sci Am S* 80:242-3 O 16 '15

**Quinoline**

Salts of acridine, pyridine and quinoline. L. H. Cone. *Am Chem Soc J* 86:2101-10 O '14

**Quirigua, Guatemala, C. A.**

### Antiquities

Use of glue molds under serious difficulties. N. M. Judd. *Il Concrete Cem* 6:151-4 Mr '15; Same. *Sci Am S* 80:56-7 J1 24 '15

## R

### Radiation

Characteristics of radiation pyrometers. G. K. Burgess and P. D. Foote. *Il diags U S Bur Stand Bul* 12:90-173 O 28 '15; Abstract. *J Fr Inst* 179:493-5 Ap '15  
Controlling infra-red emission. W. W. Coblenz. *Elec W* 66:1156-6 N 20 '15  
Difficulty of measuring heat, with special reference to radiated and convected heat. A. H. Barker and F. C. S. Brendal. *Heat & Ven* 12:21-4 My; 33-4 Je '15  
Electromagnetic radiation from the viewpoint of the electron theory. J. P. Minton. *diags Gen Elec R* 18:387-97 My '15  
Emissivity of metals and oxides. G. K. Burgess and P. D. Foote. *diags U S Bur Stand Bul* 11:41-64 N 15 '14  
Emissivity of metals and oxides; iron oxide. G. K. Burgess and P. D. Foote. *U S Bur Stand Bul* 12:83-9 O 28 '15  
Emissivity of metals and oxides; measurements with the micro-pyrometer. G. K. Burgess and R. G. Waltenberg. *U S Bur Stand Bul* 11:591-605 My 37 '15  
Emissivity of metals and oxides; the total emissivity of platinum and the relation between total emissivity and resistivity. P. D. Foote. *U S Bur Stand Bul* 11:607-12 My 27 '15  
Heat emitting capacity of radiation. C. D. Allan. *Heat & Ven* 12:32-4 Ag '15  
Measurements on standards of radiation in absolute value. W. W. Coblenz. *U S Bur Stand Bul* 11:87-96 N 15 '14

New radiation computing disk. *Il Heat & Ven* 12:54-5 Ag '15

Radiation pyrometers; sources of error in the Fery and Thwing. G. K. Burgess and P. D. Foote. *Iron Age* 96:196-7 J1 22 '15

Visibility of radiation. P. G. Nutting. *Illum Eng Soc* 9:833-42 no 7 '14

Visibility of radiation in the red end of the visible spectrum; abstract. E. P. Hyde and W. E. Forsythe. *Elec W* 66:464 Ag 28 '15

See also Cathode rays; Heat radiation; Heating—Tables, calculations, etc.; Light; Radiators; Radioactivity; Radiometer; Ultra-violet rays; X rays

**Radiation, Solar.** See Solar radiation

### Radiators

Coefficient of heat transmission in a pressed steel radiator. J. R. Allen. *plans Am Soc Heat & V E* 20:86-91 '14; Same. *Heat & Ven* 11:30-3 Mr '14; Same. *Metal Work* 81:307-9 Ja 30 '14; Same. *Dom Eng* 66:166-7 F 7 '14; Same cond. *Ind Eng* 14:171 Ap '14; Discussion. *Am Soc Heat & V E* 20:91-3 '14  
Effect of radiator decoration. T. Tait. *Dom Eng* 72:341-3 S 18 '15  
Electro-thermostatic control of radiators. *Sci Am* 112:364-4 Ap 17 '15  
Gas radiator. *Il Metal Work* 84:257 Ag 20 '15  
Gas-steam radiator. *Il Heat & Ven* 12:51-2 S '15  
Gas-steam radiators. *Il Sci Am* 113:255 S 18 '15  
Heat emission from radiators. E. D. Bottsford. *Heat & Ven* 12:49 S '15  
Heat from radiators under different temperatures. C. A. Fuller. *Heat & Ven* 12:32-5 Mr '15  
How radiator cores are made efficiently. E. C. Kreutzberg. *Il Foundry* 42:471-3 D '14  
Position of radiators in rooms. W. F. Verner. *Metal Work* 84:15 J1 2 '15  
Radiator traps and test data. L. M. Arkley. *diag Heat & Ven* 12:37-9 S '15  
Rathbone electric hot-water radiator. *Il Elec R & V Elec'n* 87:588-9 S 25 '15  
Standard methods of proportioning direct radiation and standard sizes of mains. J. A. Donnelly. *Dom Eng* 73:2-4 O 2 '15  
Tests on the heat transmission of direct radiators at low differences in temperatures. J. A. Donnelly. *diag Heat & Ven* 11:36-7 S '14; Same. *Am Soc Heat & V E* 20:405-7 '14; Same. *Dom Eng* 68:65 J1 18 '14; Discussion. *Heat & Ven* 11:38-9 S '14; Discussion. *Am Soc Heat & V E* 20:408-11 '14  
See also Automobiles—Radiators

**Radiators, Electric.** See Electric radiators

### Radicals (chemistry)

Triphenylmethyl; preparation of *p*-hydroxy-triphenylcarbinol and attempts to isolate the corresponding triarylmethyl. M. Gomberg and R. L. Jickling. *Am Chem Soc J* 37:2575-91 N '15

### Radioactive substances

Birth-time of the world: methods of determining its age. J. Joly. *Sci Am S* 79:78-9 Ja 30 '15

Extraction and separation of the radioactive constituents of carnotite. H. M. Plum. *Am Chem Soc J* 37:1797-1818 Ag '15

Periodic law. S. Dushman. *Gen Elec R* 18:617-21 J1 '15

Radio-active fertilizers. *Sci Am S* 79:53 Ja 23 '15

Radium as a fertilizer. *Sci Am* 112:396 My 1 '15

See also Carnotite; Mesothorium; Radioactivity; Radium; Thorium

### Radioactivity

Influence of radio-active earth on plant growth. H. E. Rusby. *Il Sci Am S* 79:216-18, 228-30 Ap 3-10 '15

Radio-active ores and plant life. H. Bastin. *Il Sci Am* 112:335 Ap 10 '15

Radioactivity; advances in a theory that has enabled us to study natural transmutation. *Sci Am S* 80:50-1 J1 24 '15

See also Cathode rays; Electrons; Helium; Radiography; Radiotherapy; Radium; X rays

**Radiography**

- Application of the Coolidge tube to metalurgical research. W. P. Davey. *Il Gen Elec R* 18:134-6 F '15; Same. *Iron Age* 95:500-1 Mr 4 '15; Same. *Sci Am S* 79:331 My 22 '15; Same, with description of Coolidge tube. *Engineer* 119:350-1 Ap 9 '15
- Finding blowholes with the X-rays. C. H. Tonamy. *Il diags Foundry* 43:455-6 N '15; Same cond. *Iron Age* 96:1054-5 N 4 '15
- Model X-ray dark-room. W. P. Davey. plans *Gen Elec R* 18:1107-10 D '15
- Radiography of metals. W. P. Davey. *Il Am Inst Min E Bul* 104:1515-25 Ag '15; Same. *Gen Elec R* 18:795-800 Ag '15; Same cond. *Iron Age* 96:522-4 S 2 '15; Abstract. *J Fr Inst* 180:489-90 O '15
- Röntgen motion pictures; the Dessauer process. *Il Sci Am* 112:312 Ap 3 '15
- Röntgen photographs of plants. *Il Sci Am* 113:164 Ag 21 '15
- X-ray inspection of a steel casting. W. P. Davey. *Il Gen Elec R* 18:25-7 Ja '15; Same. *Iron Age* 95:186-7 Ja 21 '15; Same. *Sci Am S* 79:84 F 6 '15; Same. *Eng M* 49:106-7 Ap '15; Same. *Ry Age (Mech ed)* 89:170 Ap '15
- X-ray work in war. *Il Sci Am S* 79:120-1 F 20 '15

**Radiometer**

- Comparison of stellar radiometers and radiometric measurement on 110 stars. W. W. Coblentz. *Il diags U S Bur Stand Bul* 11:613-56 My 27 '15
- Difficulty of measuring heat, with special reference to radiated and convected heat. A. H. Barker and F. C. S. Brendal. *Heat & Ven* 12:24 My '15
- Three methods of measuring radiant heat from gas fires. W. R. Twigg. *Il diags Heat & Ven* 13:33-8 S '15
- Various modifications of thermopiles having a continuous absorbing surface. W. W. Coblentz. pls *U S Bur Stand Bul* 11:181-87 N 15 '14

**Radiomicrometer**

- Radiometric measurements of the ionization constants of indicators. E. J. Shaeffer, M. G. Paulus, and H. C. Jones. *diags Am Chem Soc J* 87:776-807 Ap '15

**Radiotelegraphy. See Wireless telegraph****Radiotelephony. See Wireless telephone****Radiotherapy**

- Radium treatment of cancer. *Sci Am S* 79:409 Je 26 '15
- Radium water. *Sci Am* 111:473 D 5 '14
- Uniformity in dosage of radium emanation. W. J. Schieffelin. *Sci Am S* 79:123 F 20 '15
- See also Radium*

**Radium**

- Bureau of mines radium production. *Eng & Min J* 100:194-5 Jl 31 '15
- Discovery of radium in coal. *Sci Am* 112:423 My 1 '15
- Industrial uses of radium. T. T. Baker. *Eng M* 49:597 Jl '15
- Measurements of radium. *Sci Am S* 79:327 My 22 '15
- Practical methods for the determination of radium. S. C. Lind. *Il diag J Ind & Eng Chem* 7:406-10 My '15
- Progress of Bureau of mines radium work. F. K. Lane. *J Ind & Eng Chem* 7:720-1 Ag '15
- Radium situation. W. F. Bleeker. *Met & Chem Eng* 13:143-5 Mr '15; Abstract. *Eng M* 49:102-3 Ap '15; Discussion. *Met & Chem Eng* 13:202 Ap '15
- Radium: uranium ratio in carnotites. S. C. Lind and C. F. Whittemore. *diags Am Chem Soc J* 36:2056-82 O '14
- Radium-uranium ratio in carnotites. S. C. Lind and C. F. Whittemore. *Il diags U S Bur Mines Tech Pa* 88:1-28 '15
- Uniformity in dosage of radium emanation. W. J. Schieffelin. *Sci Am S* 79:123 F 20 '15
- See also Pitchblende; Radioactivity; Radiotherapy*

**Radium water**

- Radium water. *Sci Am* 111:473 D 5 '14

**Raffinose**

- Estimation of raffinose by enzymotic hydrolysis. C. S. Hudson and T. S. Harding. *Am Chem Soc J* 37:2193-8 S '15
- Preparation of raffinose. C. S. Hudson and T. S. Harding. *Am Chem Soc J* 36:2110-14 O '14

**Rafts**

- Pontoon bridges and rafts. *Il Sci Am S* 80:116 Ag 21 '15

**Ragweed**

- Bitter principle of common ragweed. B. E. Nelson and G. W. Crawford. *Am Chem Soc J* 36:2536-8 D '14

**Rail bonds**

- Brazed bonds on the Pacific electric and Los Angeles railways. *Elec Ry J* 46:455 S 11 '15
- Gas-weld rail bonding. J. R. Brown. *Il Elec Ry J* 46:1087-9 N 27 '15
- Improved method of applying rail bonds. L. P. Crecellus. *Il diag Elec Ry J* 46:236-8 Ag 7 '15

**Rail failures. See Rails—Failures****Rail fastenings**

- New rail fastening. *diag Iron Age* 95:673 Mr 25 '15
- See also Rail bonds; Spikes (railroad)*

**Rail handling**

- Making records with loading machines. F. N. Loughnan. *Il Ry Age* 58:1443 Je 18 '15

**Rail joints**

- Automatically welded electric joints in Brooklyn. *Il Elec Ry J* 44:1310 D 12 '14
- Ballou safety bolt nut for rail joints. *Il Ry Age* 59:761-2 O 22 '15
- Columbus uses new joint and track foundation. E. C. Ackerman. *Il diags Elec Ry J* 46:956-7 N 6 '15
- Emergency rail joint. *Il Ry Age* 59:532 S 17 '15
- Joint repairs on American city railways. S. Gausmann. *Elec Ry J* 45:803-4 Ap 24 '15
- New ideas in rail joints. *diags Eng N* 73:998-9 My 20 '15
- New Illinois Central standard joint. *diag Ry Age* 59:126 Jl 16 '15
- Proposed standard specifications for quenched high-carbon steel splice bars. *diag Ry Age* 59:61-2 Jl 9 '15; Same. *Iron Tr R* 57:45 Jl 1 '15
- Rail-end connections for bascule bridges. *Il diag Eng N* 73:1216-17 Je 24 '15
- Rail joints and tie spacing. *diags plan Eng N* 72:1212-13 D 17 '14
- Tests show satisfactory return-circuit conditions in Providence, R. I. *Elec Ry J* 46:825-6 O 16 '15
- Track joint conditions and creeping rails. *Ry R* 57:653-4 N 20 '15

**Rail laying. See Railroads—Track****Railings**

- Falling line system of hand railing. M. Williams. *Bldg Age* 37:59-60 My; 58-60 Jl '15
- Laying out hand rail for spiral stairway. M. Williams. *diags Bldg Age* 37:55-6 F '15
- New type of gaspipe railing proves satisfactory at Cincinnati. E. K. Ruth. *diags Eng Rec* 72:198 Ag 14 '15
- Two handrailing systems contrasted. M. Williams. *diags Bldg Age* 37:55-8 D '15
- See also Guard rails (for highways)*

**Railings, Concrete**

- Brushed concrete balustrade along Erie canal, Rochester, N. Y. *Il Concrete Cem* 6:102-3 F '15
- Concrete handrails on Kansas City terminal work. *Il Eng Rec* 70:673 D 19 '14

**Railroad accidents. See Railroads—Accidents****Railroad associations**

- American railway mechanical associations. *Ry Age* 58:353 F 26 '15

**Railroad bonds. See Railroads—Securities****Railroad bridges. See Bridges, Railroad****Railroad construction. See Railroads—Construction****Railroad crossings. See Railroads—Crossings****Railroad education**

- Education for railway work. S. O. Dunn. *Ry Age* 59:807-9 N 12 '15

**Railroad education—Continued**

Training of young men with reference to promotion. G. M. Basford. Ry Age 59:150-3 J1 23 '15

Training steam railroad men for electric operation. C. Roberts. 11 diag Elec Ry J 46:970-2 My 23 '15

*See also* Railroads—Employees

**Railroad engineering**

A. R. E. A. convention. Elec Ry J 45:570-1 Mr 20 '15

A. R. E. A. 16th annual convention. Eng N 73:598-9 Mr 25 '15

A. R. E. A. 18th annual convention: committees reports. Ry R 56:386-403 Mr 20 '15

A. R. E. A.: year's work reviewed. Eng Rec 71:374-7 Mr 20 '15

Railroads from the engineering point of view. C. F. Loweth. Eng Rec 71:4-6 Ja 2 '15

*See also* Railroad surveying; Railroads—Construction; Railroads—Maintenance and repair; Wireless telegraph for railroads

**Railroad engineers**

*See also* Locomotive engineers

**Railroad land**

Railway real estate association 1st annual meeting. Ry Age 59:727-9 O 22 '15

*See also* Railroad land grants

**Railroad land grants**

United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1099-1158 '15

**Railroad law**

Anti-full-crew law campaign. Ry Age 58:400, 444, 633-4 Mr 5-19 '15

Argument against extension of locomotive boiler inspection service. Ry R 56:817-20 Mr 6 '15

Bill extending boiler inspection to entire locomotive. Ry R 56:127 Ja 23 '15

Bill for block signals, automatic stops, steel cars, headlights and investigations (Stevens bill). Ry R 56:125-7 Ja 23 '15

Commission on relations between railways and waterways. Ry Age 58:1037-8 My 21 '15

Commission's findings relative to the Cummins law. Ry Age 58:1049-51 My 21 '15

Conference on the Cummins amendment. Ry R 56:581 Ap 17 '15

Cost of train limit legislation. Ry Age 58:979-80 My 7 '15

Cummins amendment. Ry Age 58:826-7 Ap 16 '15

Decision on the Cummins amendment. Ry R 56:705-7 My 22 '15

Decisions of the United States Supreme court. Ry R 56:860-8 Je 26 '15

Defeat of the Missouri full crew law. O. M. Spencer. Ry Age 57:1036 D 4 '14

Extra crew laws. Ry R 56:272-3 F 27 '15

Full-crew law arguments. Ry Age 58:293-4 F 19 '15

Hand brakes outlawed. Ry Age 58:1018-19 My 14 '15

Hours of service act interpreted as to telephone communications. Ry Age 59:496-7 S 17 '15

Illinois commission prescribes minimum clearances. Ry R 56:633-6 My 8 '15; Excerpt. Ry Age 58:940 Ap 30 '15

Limiting length of trains by law. M. W. Potter. Ry Age 58:268 F 12 '15

Limiting the length of trains. Ry Age 58:392 Mr 5 '15

New railroad legislation in fifteen states. Ry Age 59:23-5 J1 2 '15

New York merchants propose amendment to the Cummins act. Ry R 57:699 N 27 '15

Possible railway securities legislation. W. L. Stoddard. Ry Age 59:946 N 19 '15

Prospects of railway legislation. W. L. Stoddard. Ry Age 59:812 O 29 '15

Railroad and the hobo. E. W. Camp. Ry R 57:396-7 S 25 '15; Same cond. Ry Age 59:460 S 10 '15

Railroads' appeal to New Jersey and Pennsylvania voters against full-crew laws. Ry Age 58:311-12 F 19 '15

Railroads must divorce lake steamship lines. map Ry R 56:682-5 My 22 '15

Railroads of Pennsylvania and New Jersey on the extra-crew laws. Ry R 56:206 F 13 '15

Railways must abandon control of boat lines on the Great Lakes; abstract of the Interstate commerce commission's decision. Ry Age 58:1046-7 My 21 '15

Regulation of railway operation. W. J. Jackson. Ry Age 58:9-10 Ja 1 '15

Report of special committee on relations of railway operation to legislation. Ry Age 59:945-6 N 19 '15

Results of the locomotive boiler inspection law. F. McManamy. Ry Age 58:621-2 Mr 19 '15; Same cond. Ry Age (Mech ed) 59:190-1 Ap '15; Same cond. Power 41:898-900 Je 29 '15

Roads allowed to retain car ferries. Ry R 56:721-3 My 29 '15

Safety and short trains. M. A. Dow. Ry Age 58:1006-8 My 14 '15

Southern Pacific's ownership of the schooner Pasadena. Ry R 56:565-6 Ap 24 '15

State legislation relating to operation. Ry Age 59:360-1 N 5 '15

Tendencies toward inefficiency in legislation. R. Walker. Ry Age 58:220-1 F 5 '15

Train crew regulations in Connecticut. Ry Age 57:1118 D 18 '14

Wisconsin berth law annulled. Ry Age 59:12 J1 2 '15

*See also* Grade crossing elimination; Interstate commerce; Locomotives—Inspection; Railroads—Rates; Railroads—Trespassing; Railroads and state

**Bibliography**

Minimum train crews and maximum length of trains legislation in the United States. Special Libraries 6:25-39 F '15

Railroad libraries. Sketches of railroad libraries. Special Libraries 6:1-13 Ja '15

Railroad maps. Platting topography to distorted scale (valuation board requirement). Eng N 73:123-4 Ja 21 '15

Railroad master blacksmiths' association, international. *See* International railroad master blacksmiths' association

Railroad rates. *See* Railroads—Rates

Railroad regulation. *See* Railroads and state

Railroad shops. *See* Railroads—Shops

Railroad signals. *See* Railroads—Signals

Railroad stations. *See* Railroads—Stations

Railroad superintendents, American association of. *See* American association of railroad superintendents

Railroad supplies industry. American locomotive builders and foreign trade. W. Fawcett. Ry Age 59:643-4 O 8 '15

Autocrat at the lunch table. B. V. Crandall. Published in the weekly issues of the Railway review beginning October 17, 1914

List of exhibitors, June, 1915, conventions and exhibition. Ry R 56:447-8 Mr 27 '15

Railroad supply exhibit, Atlantic City, June 9-16. Iron Age 95:1354-5 Je 17 '15

Railway supply man's point of view. *See* weekly numbers of the Railway review

Selling railway supplies to European countries. W. S. Hiatt. 11 Ry Age 59:901-4 N 12 '15

Railroad surveying. Alaskan railroad surveys. D. L. Reaburn. 11 Eng N 73:104-6 Ja 21 '15

Lake traverses on railroad preliminary work. J. A. Mac Donald. Eng Rec 71:48 Ja 9 '15

Methods and instruments used in making precise surface and underground surveys for the Canadian Northern Ry. tunnel, Montreal, Canada. J. L. Busfield. 11 diag plan Eng & Contr 42:383-6 O 21 '14

Railroad switches. *See* Railroads—Switches, frogs, etc.

Railroad tie plates. Effect of Lundie tie plates on rail wear. diag Ry Age 58:480 Mr 12 '15

Railroad supply co. wins its case against infringers of the Wolhaupter patents. 11 Ry R 56:60-6 Ja 9 '15

Thomas rail anchor tie plate. 11 Ry Age 59:752 O 22 '15



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- Adding old ties in track. Ry R 56:659-60 My 15 '15
- Air seasoning of ties. A. H. Noyes. Ry R 56:111 Ja 23 '15
- Behavior of treated ties in alkali soils. Elec Ry J 46:1002 N 13 '15
- Creosoting of cross ties as practiced by American railroads. A. C. Steinmayer. II Assn Eng Soc J 54:110-20 Mr 15 '15
- Distribution and care of crossties. E. F. Robinson. Ry Age 58:855 Ap 16 '15
- Justifiable expenditure for tie treatment. H. Emerson and T. T. Bower. Eng Rec 71:106-7 Ja 23 '15; Same. Eng M 48:903-5 Mr 15; Summary. Ry Age 58:159-60 Ja 22 '15
- Mechanical life of ties as affected by ballast. E. Stimson. Eng Rec 71:105-6 Ja 23 '15; Same. Ry Age 58:161 Ja 23 '15; Same. Ry R 56:119-21 Ja 23 '15
- Pine ties reused by street railway after twenty-one years' service. R. C. Cram. Elec Ry J 45:296-6 F 6 '15
- Pneumatic tie peeler. II Ry Age 59:342 Ag 20 '15
- Proper supervision of tie renewals. A. W. Tabert. Ry Age 58:848 Ap 10 '15
- Renewal of ties—inspection, marking and records. Ry Age 58:1073-6 My 21 '15
- Renewing bridge ties on the Lehigh valley R. R. II Ry R 57:492-3 O 16 '15
- Renewing ties in stone and earth ballasted track. P. J. McAndrews. Ry Age 58:847-8 Ap 16 '15
- Report of A. R. E. A. committee. Ry R 58:394-6 Mr 20 '15
- Seasoning of softwood ties. A. H. Noyes. Eng Rec 71:105 Ja 23 '15
- Sill ties—treated or untreated timber, or concrete? F. J. Angier. Eng Rec 71:105 Ja 23 '15; Same. Ry Age 58:162 Ja 22 '15; Same. Ry R 56:367-8 Mr 13 '15
- Standard methods of piling and marking ties on the Pennsylvania. II Ry Age 58:334-5 F 19 '15
- Steel vs. wood ties in city track construction. J. A. Nester. II Elec Ry J 46:1089 N 27 '15
- Tie preservation on the Baltimore & Ohio R. R.; abstracts. F. J. Angier. Ry Age 59:537-8 S 17 '15; Eng & Contr 44:396-7 N 17 '15; Ry R 57:630-3 N 13 '15
- Tie timber and the unnecessary wear and tear of track. G. E. Rex. Ry R 57:362-3 S 13 '15
- Tie treating on the Boston & Worcester street railway. II Elec Ry J 45:678-9 Ap 3 '15
- Tie treatment in British India. II Ry R 56:248-9 F 20 '15
- Treated cross-ties: discussion at convention of Am. wood preservers' association. Elec Ry J 45:182 Ja 23 '15
- Treated ties on the Southern Pacific Ry. J. Q. Barlow. Eng N 74:1093 D 2 '15
- Treatment of red oak ties. Ry Age 58:159 Ja 22 '15

See also Railroad tie plates; Railroads—Construction; Railroads—Track; Wood preservation

**Cost**

- Annual cost of ties. J. G. Sullivan. Ry Age 59:352 Ag 20 '15
- Determination of annual charge for ties, poles and fence posts. W. F. Goltra. Ry Age 58:1087 My 21 '15
- Diagrams for cost of ties; Canadian Pacific railway. Eng N 74:292 Ag 12 '15
- Figuring the annual cost of ties. H. Emerson. Ry R 57:235-6 Ag 21 '15
- Figuring the annual cost of ties. J. G. Sullivan. Ry R 57:74-5, 801 JI 17, S 4 '15
- Method for finding the annual charges for ties. H. Emerson and T. T. Bower. Eng & Contr 43:155-6 F 17 '15
- Purchases in Canada during 1914. Ry Age 59:970 N 19 '15

**Railroad ties, Concrete**

- Reinforced-concrete ties after service. II Eng N 74:77-8 JI 8 '15

**Railroad ties, Steel**

- Detail cost of track work with steel twin ties. A. J. Wolfe. diags Elec Ry J 46:916-17 O 30 '15
- Developments with steel ties on the Bessemer & Lake Erie R. R. II diags Ry R 56:10-11 Ja 2 '15

- Four years of maintenance of a track crossing on steel substructure. C. A. Prentice. Elec Ry J 46:1044-5 N 20 '15
- Slick steel mine tie. diag Colliery 35:342-4 Ja '15
- Slick steel mine ties. II diags Ry R 56:436-7 Mr 27 '15
- Standard steel tie. II Ry R 57:537 O 23 '15
- Steel mine ties. II Colliery 35:380-1 F '15
- Steel tie construction in electrically-warmed concrete. J. M. Bamberger. II diag Elec Ry J 45:189-90 Ja 23 '15
- Steel tie for universal service. II Elec Ry J 46:1002 N 13 '15
- Steel ties under heavy traffic. II diags Ry Age 57:1147 D 18 '14
- Steel ties under hot ashes. II Ry R 56:875 Je 26 '15

**Railroad tracks. See Railroads—Track****Railroad yards. See Railroads—Yards****Railroads**

- Development of railways 1914. Engineer 119:17 Ja 1 '15
- Development of the steam railroad. II diags Sci Am 112:525-6+ Je 5 '15
- Engineering considerations in a proposed line. Elec Ry J 45:612, 799 Mr 13, Ap 24 '15
- International engineering congress meeting at San Francisco; abstract of papers and discussions relative to railroads. Ry Age 59:599-608 O 1 '15
- Railways. W. B. Parsons. Elec Ry J 46:623-4 S 26 '15
- Railways and prosperity. A. L. Mohler. Ry R 56:181-2 F 6 '15
- To Cuba by rail. H. C. Plummer. II map Sci Am S 79:40-1 Ja 16 '15
- See also Air brakes; Brakes; Bridges, Railroad; Cable railroads; Car ferries; Cars; Electric railroads; Elevated railroads; Express companies; Freight car service; Freight cars; Hospital trains; Locomotives; Motor cars (railroad); Mountain railroads; Railroad engineering; Railroad land; Rails; Railway mail service; Street railroads; Subways; Suspended railways; Train dispatching; Trestles; Tunnels and tunneling

**Accidents**

- Accident bulletin no. 52. Ry Age 58:299-300 F 19 '15
- British railway accidents. H. R. Wilson. Eng N 73:436 Mr 4 '15
- Five years of safety first on the Chicago & Northwestern Ry. Ry R 57:180-1 Ag 7 '15
- French railway accidents in war-time. W. S. Hatt. Ry Age 59:1015-16 N 26 '15
- Grade crossing elimination; comparison of casualties with automobile accidents. Ry Age 59:634-5 O 8 '15
- Gretna collision. Ry Age 59:653 O 8 '15
- Gretna railway accident. Engineer 119:535 My 28 '15
- I. C. C. accident reports. Ry Age 59:695-6 O 15 '15
- Interstate commerce commission quarterly accident report. Ry R 56:599-600 My 1 '15
- Maximum rate of safe retardation for passenger cars and elevators. Eng N 72:1132-3 D 8 '14
- New safety first record for railways of the United States. Ry R 57:493 O 16 '15
- New York Central awarded Harriman safety medal. Ry Age 58:371-2 F 12 '15
- Quintinshill disaster. Engineer 120:293-4 S 24 '15
- Rail failures and train accidents. Eng N 72:1160-1 D 10 '14
- Railway accidents in the United States during January, February, and March, 1914. Ry Age 57:1081 D 11 '14
- Remarkable collision between an oil car and a steam locomotive. C. A. Byers. II Sci Am 113:269 S 25 '15
- Report on collision at Orient, Ohio. Ry Age 59:947-8 N 19 '15
- Report on the wreck at Tipton Ford, Mo., Kansas City Southern Ry. Ry R 55:694-5 D 5 '14
- Report on Thurmont, Md., collision. Ry Age 59:327 Ag 20 '15
- Train accidents: monthly summaries published in the Railway age gazette

**Railroads—Accidents—Continued**

28th annual report of the Interstate commerce commission. Ry R 56:161-2 Ja 30 '15  
Two notable train accidents. Ry Age 58:943 Ap 30 '15  
While other accidents decline trespassing accidents still increase. Ry Age 59:453 S 10 '15  
Worst railway accident on record: collision at Gretna, England. Eng N 74:45-6 J 1 '15  
*See also* Derailments; Railroads—Signals; Railroads—Safety devices and measures; Railroads—Trespassing

**Accounting**

Accounting for rail and ties. C: E. Parks. Ry Age 58:470 Mr 12 '15  
Accounting for second hand serviceable material. C. H. Samson. Ry Age 58:1041-3 My 21 '15; Same. Ry Age (Mech ed) 59:285-6 Je '15  
Accounting—material store expenses; Railway storekeepers' association committee report. Ry Age (Mech ed) 59:287 Je '15  
Association of transportation and car accounting officers. Ry Age 57:1192 D 25 '14  
Cost accounting in the railroad repair shop. E. Cordeau. Eng M 49:211-17 My '15  
Denver reclaim agreement. Ry Age 58:370 F 26 '15  
Proposed bureau for clearing car repair accounts. C. F. Straub. Ry Age 59:101-2 J 23 '15  
Railroad accounting officer. H. W. Davies. Ry Age 58:1112 My 23 '15  
Railroad's maintenance expenses allocated between freight and passenger service. Eng Rec 72:226-9 Ag 21 '15  
Railway storekeepers' association: committee report on accounting—material store expenses. Ry Age 58:1043 My 21 '15

**Advertising**

Railroad advertising. E: Hungerford. Ry Age 58:1012-14 My 14 '15

**Automatic stop**

Automatic cab-signal and train-stop system. 11 diags Eng N 74:614-16 S 23 '15  
Buell's cab signal and automatic train stop. 11 diag Ry Age 59:904-5 N 12 '15  
Cab signals and automatic stops at Oroville. F. F. Bostwick. Ry Age 59:998-1000 N 26 '15  
Cab signals and automatic stops on the Western Pacific. 11 diags Ry Age 59:645-50 O 8 '15  
Devon and Ilford. Ry Age 58:921 Ap 30 '15  
Julian train control and automatic stop. 11 diags Ry Age 58:1481-2 Ja 25 '15  
New type of automatic railroad stop. 11 Sci Am 113:186-+ Ag 23 '15  
Oroville signaling criticized. M. Tainer. Ry Age 59:796-8 O 29 '15  
Report on Gray-Thurber train control system. Ry Age 58:304 F 19 '15

**Brakes**

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**Buildings and structures**

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Concrete work on the Arizona division of the Santa Fe. 11 diags Ry Age 58:849-52 Ap 18 '15  
Fuel oil stations for extreme climatic conditions. plan Ry Age 58:475-6 Mr 12 '15  
Interlocking tower of stucco on hollow tile. Rock Island lines. E. G. Zorn. 11 diags Ry R 57:108-9 J 24 '15  
Jersey Central service buildings at Jersey City have several novel features. 11 diags Eng Rec 72:70-1 J 17 '15  
New Delaware and Hudson office building at Albany. N. Y. M. T. Reynolds. 11 Concrete Cem 6:289-93 Je '15  
Paint and an aid in making the public more friendly to the railroads. E: H. Brown. Ry Age 59:969 N 19 '15  
Tools for the water service and bridge and building departments. E. M. Grime. Ry Age 59:240-1 Ag 20 '15  
*See also* Bridges, Railroad; Car houses; Coaling stations; Freight houses; Locomotive shops; Railroads—Sanitation; Railroads

—Shops; Railroads—Stations; Railroads—Storehouses; Railroads—Ticket offices; Railroads—Train sheds; Roundhouses

**Cars**

*See* Buffet cars; Cars; Dining cars; Freight cars; Motor cars (railroad); Refrigerator cars; Sleeping cars; Tank cars; Wrecking cars

**Claims**

Commission's findings relative to the Cummins law. Ry Age 58:1049-51 My 21 '15  
Concealed damage. W. H. Streeter. Ry Age 59:856 N 5 '15  
Decision on the Cummins amendment. Ry R 56:705-7 My 22 '15  
Effective freight claim preventive crusade. Ry Age 58:779-81, 817-20, 891-6 Ap 9-23 '15  
Growing magnitude of freight loss and damage claims. Ry R 56:131-2 Ja 23 '15  
Handling of claims for perishable freight. J. F. Boylan. Ry Age 59:416-17 S 3 '15  
Injuries to persons. S. S. Bishop. Elec Ry J 46:234-5 Ag 7 '15  
Loss and damage committees on the Lehigh valley. Ry Age 59:861 N 5 '15  
Loss and damage payments. Ry Age 59:993 N 26 '15  
Loss and damage prevention, Baltimore & Ohio R. R. Ry R 55:583-4 D 5 '14  
Prevention of loss and damage freight claims. G. E. Whitelam. Ry R 57:592-4 N 27 '15  
Reducing stock claims. J. L. Coss. Ry Age 59:280 Ag 13 '15  
*See also* Street railroads—Claims

**Clearance**

Illinois commission fixes railway clearances. plan Elec Ry J 46:223 Ag 7 '15  
Illinois commission prescribes minimum clearances. Ry R 56:833-6 My 8 '15; Excerpt. Ry Age 58:140 Ap 30 '15  
Track-clearance records. J. G. Wishart. Eng N 73:481-2 Mr 11 '15

**Construction**

Bingham and Garfield railway—a short road in Utah with some unusual features. H. C. Goodrich. 11 diag maps W Soc E J 20:512-29 Ja '15  
Business principles should govern railroad building. J: F. Stevens. Eng Rec 72:381-2 S 25 '15  
Car-transfer ferry on the Ohio; C. B. & Q. R. R. diags plans Eng N 74:599-600 S 23 '15  
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Concrete units for crib construction. M. D. Campbell. 11 Ry Age 58:476-7 Mr 12 '15  
Construction and improvements in 1914. Ry R 56:228-30, 260-2, 291-4 F 13-27 '15  
Construction of new line to reach Utah coal fields. 11 map Ry Age 58:971-3 My 7 '15  
Construction of the Halstead cut-off. D. L. & W. R. R. 11 diags Ry R 56:111-15, 143-9 Ja 23-30 '15  
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Data on the design and cost of concrete piles used on railroad work. diags Eng & Contr 43:452-3 My 19 '15  
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Hell-Gate arch bridge and the New York Connecting railroad. 11 diag map. Ry R 57:453-61 O 9 '15  
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Modern methods in railway tunnel construction. C. S. Churchill. diags Ry R 57:547-55 O 30 '15

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 Point Defiance line eliminates last heavy grade between Tacoma and Portland. *D: L. Soltan. map Eng Rec 71:744-5 Je 12 '15*  
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 Railroad built around burning tunnel in three weeks. *Il Eng Rec 71:797 Je 26 '15*  
 Record-breaking construction projects. *Ry Age 58:216 F 5 '15*  
 St. Paul and Oregon-Washington joint terminals in Spokane. *Il plans Ry Age 58:85-8 Ja 15 '15*  
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 \$24,000,000 South Philadelphia railroad improvement now well under way. *Il map Eng Rec 72:327-9 S 11 '15*  
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 Three-centered connecting tracks between tangents and curves. *S. E. Shoup. Eng N 73:446-8 Mr 4 '15*

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**Damages from floods, etc.**

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**Development work**

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 Construction of the Hallstead cut-off. *D. L. & W. R. R. Il diags Ry R 56:113-15 Ja 23 '15*  
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 Railroad subgrade troubles—preventives and cures. *J. T. Bowser. Eng Rec 72:203-4 Ag 14 '15*

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Association of railway electrical engineers 8th annual convention, Chicago, Oct. 19-22. *Ry R 57:529-30 O 23 '15*  
 Recent improvements in the electric lighting of steam railroad cars. *R. C. Lanphier. Il diags Am Inst E E Pro 34:1829-46 Ag '15*  
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**Electrification**

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 Australian railways to be electrified. *Elec Ry J 46:1037 N 20 '15*  
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 Butte, Anaconda & Pacific railway electrical operation. *J. B. Cox. Il maps Am Inst E E Pro 33:1720-53 N '14; Same. Gen Elec R 17:1047-65 N '14; Abstract. Elec Ry J 44:1050-1 N 7 '14; Abstract. Ry Age 57:1193-5 D 25 '14; Abstract. Eng & Min J 99:529-30 Mr 20 '15; Discussion. Am Inst E E Pro 34:134-43 Ja '15*  
 Canadian Northern tunnel and terminal electrification. *W. C. Lancaster. Il diags maps Gen Elec R 17:1066-75 N '14; Same. Ry R 55:710-15 D 13 '14*  
 C. M. & St. Paul—electrification of 440.5 miles. *Il map Ry Age 59:683-9 O 15 '15*  
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 Chicago, Milwaukee and St. Paul railway electrification. *diags map Engineer 119:104-6 Ja 29 '15*

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- Chicago, Milwaukee & St. Paul Ry.—electrification of terminal line at Great Falls, Mont. *Il Ry R* 57:57-8 JI 10 '15
- Chicago, Milwaukee & St. Paul railway; 1500-volt electrification. W. D. Bearce. *Il Gen Elec R* 18:644-5 JI '15
- C. M. & St. P. railway—Great Falls terminal line now electrically operated. *Il Eng Rec* 71:167 Je 19 '15
- C. M. & St. P. railway high-voltage direct-current system. *Elec W* 64:1186 D 19 '14
- Chicago, Milwaukee & St. Paul railway—progress on the electrification. *Il Elec R & W Elec'n* 67:769-71 O 23 '15; *Elec Ry J* 46:794-8 O 16 '15; *Eng Rec* 72:518 O 23 '15; *Ry R* 57:556-8 O 30 '15; *Power* 42:645-6 N 9 '15
- Chicago, Milwaukee & St. Paul Ry.—3000-volt direct-current electrification of the Puget Sound lines. *Power* 41:72 Ja 12 '15
- C. M. & St. P. Ry.—transmission system of the electrified divisions. R. E. Wade. *Il Ry R* 57:203-5 Ag 14 '15
- Conditions affecting the success of main line electrification. W. S. Murray. *Il Am Inst E E Pro* 34:1873-1913 Ag '15; Same. *Il Fr Inst* 179:513-57 My '15; Same cond. *Elec Ry J* 45:229-31 Ja 30 '15; Same cond. *Ry Age* 58:923-8 Ap 30 '15; Discussion. *Am Inst E E Pro* 34:1913-32 Ag '15; Same. *Il Fr Inst* 180:76-99 JI '15
- Conservatism in railroad electrification. W. S. Murray. *Eng Rec* 71:178-8 F 6 '15
- Construction, maintenance and cost of overhead contact systems; catenary construction. F. Zogbaum. *Am Inst E E Pro* 34:1267-81 Je '15; Abstract. *Elec Ry J* 46:56-7 JI 10 '15
- Contact rail installation in England. *Il diag Elec Ry J* 46:154-6 JI 24 '15
- Electric motive power in the operation of railroads. W. Hood. *Ry Age* 59:603-4 O 1 '15
- Electric motive power in the operation of railroads; abstracts. E. H. McHenry. *Elec Ry J* 46:623 S 25 '15; *Ry Age* 59:602-3 O 1 '15
- Electrical night at N. Y. R. R. club. *Elec Ry J* 45:824-5 Mr 27 '15
- Electrification discussed at meeting of Western society of engineers. *Elec Ry J* 45:579-81 Mr 20 '15
- Electrification of American railways. R. Gordon. *Il Eng M* 49:34-42 Ap '15
- Electrification of main-line railroads; abstract. B. F. Woods. *Elec W* 65:1518 Je 12 '15
- Electrification of steam railways. *Ry R* 56:407-8 Mr 20 '15
- Electrifying steam railroads. *Sci Am* 112:558 Je 5 '15
- Inertia effect of moving electric trains. J. McAnnix. *Elec Ry J* 45:714-15 Ap 10 '15
- Jamestown, Westfield & Northwestern railroad electrification. *Il map Elec Ry J* 45:1110-11 Je 12 '15
- London & Port Stanley railroad electrification. *map Elec Ry J* 44:1387-8 D 26 '14
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- Mountain railway electrification. F. Castiglioni. *Elec Ry J* 46:858-60 O 23 '15
- New departure in the electrification of steam railways. *Eng N* 73:595-6 Mr 25 '15
- New electrification work on London suburban railroads. *Elec R & W Elec'n* 67:852-4 N 6 '15
- New Haven operating results. *Elec Ry J* 46:101-2 JI 17 '15
- Norfolk & Western electrification. *Il plans map Elec Ry J* 45:1053-69 Je 5 '15
- Norfolk & Western electrification. *Il Power* 41:830-5 Je 22 '15
- Norfolk & Western Elkhorn grade electrification. *Il diag map Ry Age* 58:1153-63 Je 4 '15
- Norfolk & Western—new field for railway electrification developed. *Il Eng Rec* 71:704-6 Je 5 '15
- Norfolk & Western single-phase electrification. *Il Elec W* 65:1456-9 Je 5 '15
- Norfolk & Western railway—electric traction. *Il diag plans Eng N* 73:1192-5, 1233-43 Je 17-24 '15
- Norfolk & Western railway electrification. *Engineer* 120:57 JI 16 '15
- Norfolk & Western Ry.—electrification of the Elkhorn grade. *Il diag Ry R* 56:756-61, 791-7, 57:101-7, 150-2 Je 6-12, JI 24-31 '15
- Norfolk & Western railway; electrification of the Elkhorn grade. *Il Sci Am S* 79:372-4 Je 12 '15
- Ontario municipal railway—1500-volt direct-current electrification. G. H. Hill. *Gen Elec R* 18:10-11 Ja '15
- Operating results of the electrification of steam railroads; with discussion. G. Gibbs, E. B. Kattie, W. S. Murray and C. A. Goodnow. *W Soc E J* 20:303-38 Ap '15; Abstract. *Am Soc M E J* 87:357 Je '15
- Overhead construction in the Philadelphia-Paoli electrification. *Il Elec Ry J* 46:1113 Je 12 '15
- Overhead contact systems, construction and costs. E. J. Amberg. *pls Am Inst E E Pro* 34:1255-66 Je '15; Abstract. *Elec Ry J* 46:56 JI 10 '15
- Passing of the steam locomotive. C. B. Brewer. *Il Sci Am* 113:488-9 D 4 '15
- Paths of progress. *Gen Elec R* 18:3-4 Ja '15
- Pennsylvania inaugurates electric service in Philadelphia. *Il diag Eng Rec* 72:590-3 N 13 '15
- Pennsylvania railroad electrification at Philadelphia. *Il Elec R & W Elec'n* 67:923-8 N 20 '15
- Pennsylvania railroad electrification at Philadelphia. *Il map Ry Age* 59:883-94 N 12 '15
- Pennsylvania railroad electrification at Philadelphia. *Il plan Elec W* 66:1074-6 N 13 '15
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- Philadelphia-Paoli electrification. *Il diag Elec Ry J* 46:980-9 N 13 '15
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- Progress in railway electrification in 1914. N. W. Storer. *Ry Age* 58:12 Ja 1 '15
- Radiator-type transformers for the New Haven system. *Il diag Elec W* 65:401-3 F 20 '15
- Railway electrification at Sydney, Australia. *Elec R & W Elec'n* 67:903 N 13 '15
- Railway electrification—possibilities and precautions. W. S. Murray. *Eng Rec* 71:394 Mr 27 '15
- Results of Italian three-phase electrifications. G. Pontecorvo. *Il Elec Ry J* 45:450-4 Mr 6 '15
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- Running railroads by water power. T. F. Logan. *Il Sci Am* 112:603-4 Je 19 '15
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 Aspects of the financial problem of the railways; effect which the Federal reserve act will have on needs of railways for new capital. H. F. Willis. Ry Age 58:999-1002 My 14 '15; Excerpts. Ry R 56:734-7 My 29 '15  
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Railroad sessions of National safety congress. Ry Age 59:313-16 O 29 '15

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St. Louis, inadequate terminal facilities. Ry Age 59:147-8 JI 23 '15

St. Paul and Oregon-Washington joint terminals in Spokane. II plans Ry Age 58:85-8 Ja 15 '15

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- Santa Fe to solve Chicago fruit terminal problem. plan Eng Rec 71:819-20 Je 26 '15  
 Spokane terminal improvement involved variety of engineering construction. il plan Eng Rec 71:234-6 F 20 '15  
 Terminal facilities at San Diego. il plans Elec Ry J 45:587-8 Mr 20 '15  
 Terminal improvements of the Canadian Pacific railway at Vancouver. il plan Eng N 73:340-1 F 18 '15  
 Terminal improvements of the Canadian Pacific railway at Vancouver. il plans Ry R 56:380-5 Mr 20 '15  
 Track layout and signals of the Jersey City passenger terminal of the Central R. R. of New Jersey. diag plan Ry R 56:647-50 My 15 '15  
 Troublesome problems of terminal operation. Ry Age 58:695-6 Mr 26 '15  
 Viaduct construction on the Kansas City terminal. A. R. Eitzen. il diag Ry Age 58:397-400 Mr 5 '15  
*See also* Locomotive terminals; Railroads—Stations; Railroads—Train sheds; Railroads—Yards; Street railroads—Terminals

**Ticket offices**

- Centralized ticket offices for St. Louis railroads. plan Ry Age 57:1042 D 4 '14  
 Ticket offices of large passenger terminals. Ry Age 58:1411-14 Je 18 '15

**Tool houses**

- Stoves in tool houses. Ry R 57:624 N 13 '15

**Tools and implements**

- Proper repair of tools for track maintenance. M. E. Carroll. il Ry Age 59:952-4 N 19 '15  
 Railway mowing and weed-cutting machines. il Eng N 73:822-3 Ap 29 '15  
 Tool equipment for maintenance of way forces. Ry Age 59:337-41 Ag 20 '15  
 Tools for section and extra track gangs. P. J. McAndrews. Ry Age 59:338 Ag 20 '15  
 Tools for the water service and bridge and building departments. E. M. Grime. Ry Age 59:340-1 Ag 20 '15  
 Tools for track gangs. Ry Age 59:337-8 Ag 20 '15  
 Up-keep of track tools. M. E. Carroll. il Ry R 57:341-3 S 11 '15

**Track**

- A. R. E. A. committee report on roadway. Ry R 56:393-4 Mr 20 '15  
 Battery locomotive for track laying. il Engineer 119:585-6 Je 11 '15  
 Building a permanent railway track on a pile foundation. il diag Eng N 73:200-1 F 4 '15  
 Concrete eliminates soft spots in railway roadbed. J. T. Bowser. Eng Rec 72:506 O 23 '15  
 Designing manganese steel track work. V. Angerer. Ry Age 59:341-2 Ag 20 '15  
 Development of special steels for track work. W. C. Cushing. Ry Age 59:747-51 O 23 '15  
 Digging track ditches. K. L. Van Auken. il Ry Age 59:355-6 Ag 20 '15  
 Ditching and cleaning track. J. Snyder. Ry R 57:650-1 N 20 '15  
 Draining embankments in Missouri. il Ry Age 58:1438-9 Je 18 '15  
 Economy in the use of track material. J. T. Bowser. Ry R 57:239 Ag 21 '15  
 Economy in track work and its relation to rolling stock. J. W. Powers. Ry Age 58:479 Mr 12 '15  
 Economy methods in track work. W. C. Nisbet. Ry Age 58:1433-4 Je 18 '15  
 Flangeway guards and frog guard-rails. diag Eng N 73:1031 My 27 '15  
 General makeup of track for heavy traffic. Ry R 57:406-9 S 25 '15  
 Important elements in the maintenance of track. W. F. Rench. Ry Age 58:1439-40 Je 18 '15  
 Inclination of the rail in economic railroad practice. J. Lundie. Ry Age 59:335-6 Ag 20 '15  
 Laying rail on a busy line. W. F. Rench. Ry Age 58:1083 My 21 '15  
 Laying rail on the Lehigh valley. G. L. Moore. Ry Age 58:1084-5 My 21 '15  
 Laying rail with the help of locomotive cranes. il Ry Age 59:353-4 Ag 20 '15  
 Lighting plant for tracklaying. Priesha Upington Kalkfontein Ry. N. K. Prettejohn. il Ry R 57:515-16 O 23 '15  
 Magnolia cut-off improvement on the Baltimore and Ohio railroad. A. W. Thompson. il maps Eng Soc W Pa 30:823-7 D '14  
 Manganese steel track-work specifications. Elec Ry J 45:1118 Je 13 '15  
 Measuring stresses in railway roadbeds. diag Eng N 73:743 Ap 15 '15  
 159-pound girder rail for Philadelphia streets. diag Eng Rec 72:264 Ag 23 '15  
 Organization for track maintenance from a committee report to the Roadmasters' and maintenance of way association. Ry R 56:221-4 F 18 '15  
 Organization of section forces and methods for maintaining and policing track. Ry Age 59:517-22 S 17 '15  
 Permanent track maintenance force on the Long Island R. R. Eng N 73:474-5 Mr 11 '15  
 Pneumatic tie tamper. il Ry Age 58:473-4 Mr 12 '15  
 Promoting the growth of vegetation on the slopes. W. F. Rench. Ry Age 58:471-2 Mr 12 '15  
 Proper repair of tools for track maintenance. M. E. Carroll. il Ry Age 59:952-4 N 19 '15  
 Proposed standard specification for quenched carbon steel track bolts. Ry Age 59:62-3 J1 9 '15; Same. Iron Tr R 57:43-4 J1 1 '15  
 Putting in service a new line with dense traffic. W. F. Rench. Ry Age 59:531 S 17 '15  
 Rail laying. H. G. Olmstead. Ry Age 58:462-3 Mr 12 '15  
 Rail laying on lines of moderate traffic. E. R. Lewis. Ry Age 58:1083-4 My 21 '15  
 Railroad tracks as conductors for telephonic communication. il Sci Am 113:363+ O 23 '15  
 Rapid improvement of a section. K. L. Van Auken. Ry Age 59:963-4 N 19 '15  
 Recent important developments in ballast practice. Ry Age 58:1436-8 Je 18 '15  
 Renewing bridge ties on the Lehigh Valley with a locomotive crane. il Ry Age 59:526 S 17 '15  
 Results gained with a ballast dresser. il Ry Age 59:529-30 S 17 '15  
 Roadmasters' and maintenance of way association 33d annual convention. Ry R 57:324-6 S 11 '15  
 Smoothing a railway subgrade to insure good drainage. Eng N 73:498-9 Mr 11 '15  
 Special railway track for Philadelphia streets. diag Eng N 74:929 N 11 '15  
 Standard track construction on the Great Eastern railway of England. W. A. D. Short. diag Ry Age 59:130 J1 16 '15  
 Steady employment for section men, on the Long Island R. R. C. King. Ry R 56:539-40 Ap 17 '15  
 Stresses in track. Ry R 56:412 Mr 20 '15  
 Suggested organization for track maintenance. G. C. Crites. Ry Age 57:1148 D 18 '14  
 Tamping track with air power. il Eng N 72:1219 D 17 '14  
 Tie-plate with inclined face. diag Eng N 74:987 N 18 '15  
 Tools for section and extra track gangs. P. J. McAndrews. Ry Age 59:338 Ag 20 '15  
 Tools for track gangs. Ry Age 59:337-8 Ag 20 '15  
 Track and roadbed. G. H. Pegram. Elec Ry J 46:624 S 25 '15  
 Track force for renewing rails. Eng N 74:752-3 O 14 '15  
 Track labor problem. E. T. Howson. Ry Age 59:522-4 S 17 '15  
 Track maintenance. K. L. Van Auken. Ry R 57:526-9, 660-3 O 23, N 20 '15  
 Transverse fissures the result of rail galling. P. H. Dudley. il Ry Age 59:1001-4 N 36 '15  
 Up-keep of track tools. M. E. Carroll. il Ry R 57:341-3 S 11 '15  
 Vaughan track indicator. il Ry Age 59:970 N 18 '15  
*See also* Ballast; Guard rails; Rail fastenings; Railroad tie plates; Railroad ties; Railroads—Clearance; Railroads—Construction; Railroads—Crossings; Railroads—Curves and turnouts; Railroads—Gages; Railroads—Grades; Railroads—Switches; Rails; Spikes (railroad)

## Railroads—Continued

## Track depression

- Elimination of the Tower Grove crossings, St. Louis, Mo. S. L. Wonsen. *Il diags plans Assn Eng Soc J* 56:95-115 O '15; Same cond. *Ry Age* 59:799-803 O 29 '15; Same cond. *Eng Rec* 72:627-9 N 20 '15
- Track depression at Mattoon; Illinois Central R. R. *Il diag plan Eng N* 74:110-12 J1 15 '15
- Track depression at Minneapolis. *diags Eng N* 73:514-17 Mr 18 '15
- Track depression work of the C. M. & St. P. Ry. at Minneapolis. *Il Ity R* 57:69-72 J1 17 '15

## Track elevation

- Chicago track elevation; Rock Island lines. *Il diags Eng N* 73:679-5 Ap 8 '15
- Concreting trains for track-elevation work. *Il Eng N* 74:315-17 Ag 12 '15
- Factors in grade separation. *Eng N* 73:422-3 Mr 4 '15
- Grade crossing elimination in North Toronto, Ontario. *Il diag plan Ry Age* 59:555-8 S 24 '15
- Heavy plate-girders in track-elevation work. *Il Eng N* 73:1036-7 My 27 '15
- New I. C. station and track elevation at Memphis. *Il plan Ry Age* 58:179-81 Ja 29 '15
- Pennsylvania track elevation through Wilkesburg, Pa. *Il plans Ry Age* 59:654-8 O 8 '15
- Rock Island track elevation work at Chicago. *Il diags Ity Age* 58:690-4 Mr 26 '15
- Temporary timber walls for track elevation. *Il Eng Rec* 71:616 My 22 '15
- Three-level railway crossing at Chicago. *Il diags plans Eng N* 73:708-10 Ap 15 '15
- Track elevation at Lynn, Mass. C. B. Breed. *Il diags plans Eng N* 74:533-7 S 16 '15
- Track elevation on the Nickel Plate railroad at Chicago. *Il diag map Eng N* 74:888-91 N 4 '15
- Track elevation work of the Chicago & Western Indiana R. R., in Chicago. *Il plan Ry R* 57:951-3 N 20 '15

*See also* Elevated railroads

## Track inspection

- Conducting track inspection on the Grand Trunk. *Il Ity Age* 57:1145-7 D 18 '14
- Development of P. R. R. track inspection system. J. T. Richards. *Il Ity Age* 58:153-6 Ja 22 '15
- Methods of conducting annual track inspections. *Ry Age* 58:325-9 F 19 '15

## Traffic

- Effects of the Panama canal on railway traffic. *Ry Age* 57:1111-12 D 18 '14
- Transportation in Chicago during a traction strike. *Il Ry Age* 58:1469-74 Je 25 '15

## Train load

- Early tonnage studies. *Ry Age* 59:973 N 19 '15
- Scientific train loading; tonnage rating. O. S. Beyer, Jr. *Ry Age* 59:507-11 S 17 '15; Same. *Ry Age* (Mech ed) 89:502-5 O '15; Same abstr. *Ry R* 57:594-8 N 6 '15

## Train sheds

- English railway trainshed; Great Western Ry. station in Birmingham. *Il diags plan Eng N* 72:1112-14 D 3 '14
- Unit-built concrete umbrella sheds, Los Angeles, California. R. R. Newman. *Il diags Concrete Cem* 7:20-2 J1 '15

## Train speed

- Premiums for freight train speed. *Ry Age* 58:977-8 My 7 '15

## Trains

- Cost of stopping and starting trains. F. W. Green. *Ry R* 56:655-7 My 15 '15
- Cost of train limit legislation. *Ry Age* 58:979-80 My 7 '15
- Handling of local or way-freight trains. R. R. Farmer. *Ry Age* 57:1117 D 18 '14
- Limiting length of trains by law. M. W. Potter. *Ry Age* 58:268 F 12 '15
- Limiting the length of trains. *Ry Age* 58:392 My 5 '15
- Local freight train. F. H. Garner. *Ry Age* 59:394 Ag 27 '15

- Maximums and minimums in train operation. A. Price. *Ry R* 56:286-9 F 27 '15; Same. *Ry Age* 58:401-3 Mr 5 '15
- Relation between the number of trains and passing points. F. M. La Bach. *Ry Age* 59:197-8 J1 30 '15
- Safety and short trains. M. A. Dow. *Ry Age* 58:1006-8 My 14 '15
- Standard code on the Buffalo, Rochester & Pittsburgh. *Ry Age* 58:619-20 Mr 19 '15
- See also* Hospital trains; Railroads—Work trains

## Bibliography

- Minimum train crews and maximum length of trains legislation in the United States. Special Libraries 6:25-39 F '15

## Trespassing

- Enforcing the laws against trespassing. *Ry Age* 58:202 Ja 29 '15
- Railroad and the hobo. E. W. Camp. *Ry R* 57:396-7 S 25 '15; Same cond. *Ry Age* 59:460 S 10 '15
- Repressing trespassers on the New Haven. *Ry Age* 59:696 O 15 '15
- While other accidents decline trespassing accidents still increase. *Ry Age* 59:163 S 10 '15

## Valuation

- Accommodations de luxe for federal valuation engineers. *plan Eng Rec* 70:696-8 D 26 '14
- Actual railroad contingencies and what they cost. *Eng Rec* 71:774 Je 19 '15
- Appraisal of the P&E Marquette lines in Michigan; abstract of a report to the railroad commission. M. B. Cooley. *Ity Age* 58:376-7 F 26 '15
- Appraisal report of P&E Marquette railroad fills ten large boxes. *Il Eng Rec* 71:300-2 F 13 '15
- Billion dollar confiscation. M. W. Gaines. *Ry Age* 58:1150-2 Jo 4 '15
- Calculating cross section areas on railroad valuation work. F. T. Morse. *Ry Age* 59:29 J1 2 '15
- Chicago & Northwestern Ry. valuation work. *Eng N* 74:813-5 O 28 '15
- Commerce commission hears railroads on valuation. *Eng Rec* 72:161-2 O 9 '15
- Conference on federal valuation. *Elec Ry J* 45:1031 My 29 '15
- Considerations in right of way valuation. H. P. Gillette. *Ry Age* 58:1483-4 Je 25 '15; Same. *Eng & Contr* 43:572-3 Je 30 '15
- Cost of valuation. J. MacDonald. *Elec W* 65:589 Mr 6 '15
- Cost of valuation to the New York New Haven & Hartford R. R. *Ry R* 57:90 J1 17 '15
- Depreciation and confiscation. A. C. Humphreys. *Ry Age* 59:311-12 Ag 30 '15
- Developments in connection with federal valuation. *Ry R* 57:633 N 13 '15
- Developments in railway valuation. *Ry R* 56:653 My 15 '15
- Elements of railroad value that might be overlooked. *Eng Rec* 71:523-4 Ap 21 '15
- Federal railway-valuation work. G. H. Burgess. *Eng N* 74:12-14 J1 1 '15
- Federal valuation of joint facilities. R. J. McCarty. *Ry Age* 58:699 Mr 26 '15
- Federal valuation of the Boston and Maine railroad. F. C. Shepherd. *Boston Soc C E J* 2:241-326 O '15; Same abstr. *Eng Rec* 72:538-41 O 30 '15; Same abstr. *Ry R* 57:665-7 N 20 '15
- Federal valuation of the railroads in the United States. *Ry R* 57:461, 470-2, 485-7 O 9-16 '15
- Form proposed for federal valuation report. D. F. Jurgensen. *Eng Rec* 72:184-5 O 16 '15
- Fundamental problems involved in railway valuation. *Ry Age* 58:1146-50 Je 4 '15
- How the federal valuation of the Boston & Maine railroad is being done. F. C. Shepherd. *Eng Rec* 72:538-41 O 30 '15
- Instructions for roadway and track men on federal valuation; abstract of second tentative draft issued by Interstate commerce commission. *Eng Rec* 70:638-40 D 12 '14; *Ry Age* 58:62-4 Ja 8 '15
- Interstate commerce commission hearing on valuation. *Ry Age* 59:651-3 O 8 '15
- Land reproduction cost figured by a definite method. H. V. Hayes. *Eng Rec* 72:626 N 20 '15

**Railroads—Valuation—Continued**

- Making a physical valuation of large terminals. C. L. Van Auken. Ry Age 59:127-9 J1 16 '15
- Mileage of government valuation inventory tabulated. Eng Rec 72:601 N 13 '15
- Practical limit of detail in the federal valuation. Ry Age 58:44 Ja 8 '15
- Preparing for the federal valuation of the railways. Ry Age 58:1107-9 My 28 '15
- Progress of federal railroad evaluation. Eng Rec 71:40 Ja 9 '15
- Progress of federal valuation. Ry R 56:518-19 Ap 17 '15; Eng Rec 71:485-6 Ap 17 '15
- Railroad and public officials discuss federal valuation in three-day conference. Eng Rec 71:728 Je 5 '15
- Railway-valuation office index and file system. H. J. Saunders. Eng N 74:834-6 N 4 '15
- Recent progress in the federal valuation work. II diagrs Ry Age 59:569-71 S 24 '15
- Reproduction basis of valuation criticised. J. M. Esuleman. Eng Rec 72:625-6 N 20 '15
- Right of way valuation. Ry R 56:253-4 F 30 '15
- Suggested form of inventory for valuation of common carrier property. D. F. Jurgensen. Assn Eng Soc J 55:129-38 O '15
- Tangled theories of railway valuation. Eng & Contr 43:507 Je 30 '15
- Valuation circulars. Ry Age 58:443-4 Mr 12 '15
- Valuation conference in Washington, March 23. Eng Rec 71:324-5 Mr 13 '15
- Valuation methods on the Big Four. Ry Age 59:701-2 O 15 '15
- Valuation of railway land. W. A. Cokeley. Ry Age 59:727 O 22 '15
- Valuation of railways. Ry Age 57:1110 D 18 '14
- Wash hearings aid in railroad valuation work. II Eng Rec 71:776 Je 10 '15
- What shall be done regarding the valuation? Ry Age 58:174-5 Ja 29 '15
- When is land used for common carrier purposes? Eng Rec 71:424 Ap 3 '15
- Why the valuation should not be discontinued. C. A. Prouty. Ry Age 58:7-8 Ja 1 '15

**Water supply**

- Bacteriological standard for drinking water on common carriers. Eng Rec 70:617-18 D 5 '14; Eng N 72:1203 D 17 '14; Munic J 37:924 D 24 '14; Eng & Contr 43:77 Ja 27 '15; Am Water Works Assn J 2:61-73 Mr '15
- Cool drinking water for passengers on Indian railways diagrs Ry R 57:372-3 S 18 '15
- Examination of drinking water on railway trains. E. E. Bartow. Am Water Works Assn J 2:74-82 Mr '15
- Railway roadside water tanks for locomotive supply; with comparative costs of wood and steel structures. diagrs Ry Age 59:955-8 N 19 '15; Abstract. Ry R 57:517-18 O 23 '15
- Reinforced concrete for railway water tanks. J. T. Bowser. Eng Rec 71:81-2 Ja 16 '15
- Treatment of water for locomotive use. W. A. Fownall. Am Water Works Assn J 2:434-41 Je '15; Same. Ry R 56:470-2 Ap 3 '15
- Water service tests. P. M. La Buch. Ry Age 59:536 S 17 '15
- Water waste. C. R. Knowles. II Ry Age 59:756-8 O 23 '15

See also Water tanks

**Work trains**

- Making records with loading machines. F. N. Loughnan. II Ry Age 58:1443 Je 18 '15

**Yards**

- Chicago freight interchange yard. II plans Eng N 73:1153-6 Je 17 '15
- Combination through classification and terminal yard. W. C. Copley. Ry Age 58:51-3 Ja 8 '15
- Co-operation in yard operation. H. H. Larson. Ry Age 59:89-90, J1 16 '15
- Finley yard of the Southern railway at North Birmingham, Ala. II plans Ry R 57:355-60 S 18 '15
- Freight terminal car checking system. I. T. Tyson. Ry Age 58:748-9 Ap 2 '15
- Interchange problem in yard operation. E. C. Tucker. Ry Age 58:1474 Je 25 '15
- Measurement of efficiency in yard operation. J. W. Roberts. Ry Age 58:1246-7 Je 11 '15
- New type of chart shows operation of Chicago terminal. Eng Rec 72:445-6 O 9 '15

- Operating the Milwaukee (Wis.) terminals of the St. Paul. W. B. Hinrichs. Ry Age 57:1060-1 D 4 '14
- Operation of large yards. A. M. Umshler. Ry R 55:750-3 D 19 '14
- Personality and experience. R: Brooker. Ry Age 59:204 J1 30 '15
- Practical problems of terminal operation. Ry Age 58:240-1 F 6 '15
- Proposed gantry crane for car repair yards. W. E. Johnston. plans Ry Age (Mech ed) 59:304 Je '15
- Qualifications of a terminal superintendent. S. W. Roberts. Ry Age 59:434-5 S 3 '15
- Railway classification yard lighting; with discussion. D. P. Morrison. II plans Eng Soc W Pa 30:641-68 O '14
- Rolling resistance of cars over switches and frogs. C. L. Eddy. Ry Age 58:796-8 Ap 9 '15
- Terminal proposition. R. M. Baker. Ry Age 59:191-2 J1 30 '15
- Troublesome problems of terminal operation. Ry Age 58:695-6 Mr 26 '15

See also Railroads—Switching

**Alaska**

- Alaska railroad; route and cost. Eng Rec 71:479 Ap 17 '15
- Alaskan government railroad. map Ry Age 59:230 Ag 6 '15
- Alaskan government railway. map Ry Age 58:896 Ap 23 '15
- Alaskan railroad surveys. D. L. Reaburn. II Eng N 73:104-6 Ja 21 '15
- Government railway of Alaska. map Eng & Contr 43:sup25 Ap 14 '15
- Government's Alaskan railway. II map Ry R 57:393-6 S 25 '15
- Progress on the Alaska railway surveys. Ry Age 58:32 Ja 1 '15
- Progress on the Alaskan railways. II Eng N 74:43-4 J1 1 '15
- Route of the Government Alaskan railroad. map Eng & Min J 99:705-6 Ap 17 '15
- Seward-Sustna route chosen for Alaska railroad. map Eng Rec 71:482-3 Ap 17 '15
- U. S. government's Alaskan railway. map Ry R 56:528-31 Ap 17 '15

**Australia**

- Proposed transcontinental railroads of Australia. W. D. Hornaday. map Ry Age 58:782 Ap 9 '15

**British Columbia**

- Comparison of the old and new lines of the Canadian Pacific at Rogers Pass. B. C. J. G. Sullivan. Ry Age 58:194-5 Ja 29 '15

**Burma**

- Southern Shan states railway. II map Engineer 119:502-3 My 21 '15

**Canada**

- Canadian Northern Ry. opened to the Pacific coast. II map Eng N 74:1098-9 D 2 '15
- Grand Trunk Pacific railway. map Eng N 74:245 Ag 5 '15
- Operating results of Canadian railways in 1914. J. L. Payne. Ry Age 58:987-9 Mr 26 '15
- Report on Canadian railways. Ry R 57:365 S 18 '15

See also Railroads and state—Canada; Van Buren Bridge route

**China**

- American engineer in China. W. B. Parsons. II Jr Fr Inst 179:390-406 Ap '15; Abstract. Eng M 49:430-4 Je '15
- Railways in China. II map Engineer 117:443-4, 601-2, 664-6, 611-12, 666-8; 118:6-7, 85-6, 154-5, 453-4; 119:121-2, 197, 347-8; 120:115-16 Ap 24, My 3, 22, Je 6, 19, J1 3, 24, Ag 7, N 13 '14, F 6, 26, Ap 9, J1 30 '15
- Status of Chinese railways. C. D. Jameson. Ry Age 59:602 O 1 '15

**England**

- Railway problem of London. map Engineer 119:619-20 Je 25 '15

**Europe**

- Foreign rail, wheel and axle specifications. Iron Age 96:52-4 J1 1 '15

**Railroads—Europe—Continued.**

Transportation in Europe. A. Stuckl. Ry Age 59:194-7 J1 30 '15

**France**

Efficiency of French women as railway workers. W. S. Hiatt. *Il Ry Age* 59:943-5 N 19 '15  
 France saved by her railroad men. W. S. Hiatt. Ry Age 58:1047-8 My 21 '15  
 French passenger service. Ry Age 59:798 O 29 '15  
 French railroad excursions in war time. W. S. Hiatt. Ry Age 59:468-9 S 10 '15  
 French railroads as security brokers. W. S. Hiatt. *Il Ry Age* 59:610-12 O 1 '15  
 French railway accidents in war-time. W. S. Hiatt. Ry Age 59:1015-16 N 26 '15  
 French railways in war time. Ry Age 58:1422-3 Je 18 '15  
 How a destroyed French railroad helps its employees. W. S. Hiatt. Ry Age 59:386 Ag 27 '15  
 How and why French railroads sell their securities direct to the public. W. S. Hiatt. Ry Age 59:240 Ag 6 '15

**Germany**

Achievements of the state railway lines of Germany. W. M. Acworth. Ry Age 59:725 O 22 '15  
 German railways and the war. Engineer 119: 186 F 19 '15; Same. Sci Am S 79:254 Ap 17 '15  
 Germany's strategic railways. V: Cambon. maps Eng M 49:33-6 Ap '15  
 Great achievements of German state railroad lines. F: W. Wiler. Ry Age 59:428-30 S 8 '15; Same. Sci Am S 80:218-19 O 2 '15

**Great Britain**

Annual report of the railways of the United Kingdom. Ry Age 59:690 O 15 '15  
 English railway men's war bonus. Ry Age 59: 899 N 12 '15  
 Necessaries of life and British railways. Engineer 119:186 F 19 '15  
 Number and types of locomotives on British railways. Engineer 120:108-9 J1 30 '15  
 Railway year. Engineer 119:274-5, 297, 325-6 Mr 19-Ap 2 '15  
 Statistics of English railways in war time. J. H. Parmelee. Ry Age 58:1241 Je 11 '15  
 War bonus for English railwaymen. Ry Age 58:447 Mr 12 '15  
 War performance of British railways. Ry R 57:452 O 9 '15

See also Railroads and state—Great Britain

**Hawaiian Islands**

Rapid growth of Hawaiian railway. Ry R 57: 73-4 J1 17 '15

**India**

British-built hopper cars for the Bengal-Nagpur Ry. F. C. Coleman. *Il Ry R* 57:432-3 O 2 '15  
 British India. U S Sp Cons Rep 72:73-80 '15  
 Status of Indian railways. V: Bayley. Ry Age. 59:600-2 O 1 '15

**Italy**

Italian railways. L. Luigi. Ry Age 59:599-600 O 1 '15

**Mexico**

Mexican railway; 1873 and 1915. W: R. Eastman; W. T. Ingram. *Il map Eng N* 74:1016-18 N 25 '15

**Nevada**

Two desert railway lines merged. C: A. Byers. map Ry R 55:743 D 19 '14

**New England**

New England and the New Haven road. H. Elliott. Ry Age 58:381-2 Ap 23 '15  
 New England railroad situation. Ry Age 58: 729-31 Ap 2 '15  
 New England railroads in 1845. map Ry Age 59:471 S 10 '15  
 Situation in New England. Ry Age 58:176-7 Ja 29 '15

**New South Wales**

Deficit for government railways despite rate increases. Ry R 57:536-7 O 23 '15

**New Zealand**

New Zealand railways. Engineer 118:563 D 11 '14

**Palestine**

Railway lines of Syria and Palestine. L. R. Freeman. *Il map Ry Age* 59:199-203 J1 30 '15

**Panama**

Railway construction in republic of Panama. R. W. Hebard. Eng & Contr 43:sup29-30 My 19 '15

**Russia**

Freight equipment cars for the Russian government. *Il diag Ry R* 57:419-23 O 2 '15  
 General locomotive. Sci Am 112:212 Mr 6 '15  
 Private railways excel in Russia. Ry R 55:684-5 D 5 '14  
 Suggestions regarding the determination of the properties of steel; Russian railway tests. A. N. Mitinsky. Am Inst Min E Bul 104:1697-1705 Ag '15; Abstract. Iron Age 96:462-3 Ag 28 '15; Same cond. (Proportional limit is prime factor) Iron Tr R 57:1184-6 D 18 '15

**Siberia**

Construction work on the Amur (Siberian) railway. W. A. D. Short. *Il Ry Age* 59:971-2 N 19 '15

**South America**

Transandine railways of Chile and Argentina. Ry R 56:324 Mr 6 '15

**Switzerland**

Furka railway; a new Alpine railway from the Rhone to the Rhine. A. Gradenwitz. *Il Sci Am S* 79:344-5 My 29 '15  
 Opening of the Mont d'Or tunnel. *Il map Engineer* 119:505-6, 508 My 21 '15  
 Railway engineering work in Switzerland. Engineer 119:397 Ap 23 '15

**Syria**

Railway lines of Syria and Palestine. L: R. Freeman. *Il map Ry Age* 59:199-203 J1 30 '15

**Turkey**

Railway tunnel construction in Turkey. Ry R 57:546-7 O 30 '15

**United States**

American engineering in 1914. Engineer 119: 164-5 F 12 '15  
 Commerce board presents steam-road statistics. Eng Rec 71:453-4 Ap 10 '15  
 Construction and improvements for 1915. Ry R 56:30-3, 55 Ja 3-9 '15  
 Disintegration of the Gould system. Ry Age 58:728-9 Ap 2 '15  
 Rail sections as one element in steam and electric traction. P. H. Dudley. diag Gen Elec R 17:1036-46 N '14; Same. Sci Am S 78: 362-3, 370-1 D 5-12 '14  
 Railroad statistics to June 30, 1914. Ry Age 58:795-6 Ap 9 '15  
 Railroads as a factor in our national life. H. Elliott. Ry Age 59:96-7 J1 16 '15  
 Railway construction in 1914. Ry Age 58:3 Ja 1 '15  
 Railway construction in 1914. Ry R 56:27-30 Ja 2 '15  
 Railway construction statistics for 1914. Ry Age 58:23-7 Ja 1 '15  
 Railway preparedness. O. Bates. Ry R 57:82-3 J1 17 '15  
 Railway situation from different viewpoints. Ry Age 58:7-14 Ja 1 '15  
 Railways and the California expositions. *Il Ry Age* 59:461-4 S 10 '15  
 Rivers and railroads in the United States. W: W. Harts. Ry Age 58:230-1 F 5 '15; Discussion. F. Lavis. Ry R 56:860-2 My 15 '15; Same cond. Ry Age 58:975-8 My 7 '15  
 Statistics of steam railways in the United States for the year ended June 30, 1914. Ry R 56:503-4 Ap 10 '15  
 Statistics of steam railways; Interstate commerce commission gives comparative figures for the years 1913 and 1914. Elec Ry J 45: 755 Ap 17 '15  
 Talk optimism, act optimism! Ry R 55:772-4 D 26 '14

**Railroads—United States—Continued**

Trend of railway affairs in two eight-year periods. Ry Age 59:85-6 J1 16 '15  
28th annual report of the Interstate commerce commission. Ry R 56:159-64 Ja 30 '15  
War capacity of United States railways. R. Grimshaw. Sci Am 112:417- My 1 '15

See also Railroads and state—United States; also names of railroads, e. g. Great Northern railway; Van Buren bridge route

**Utah**

Bingham and Garfield railway—a short road in Utah with some unusual features. H. C. Goodrich. Il diag maps W Soc E J 20:512-29 Je '15

Construction of new line to reach Utah coal fields. Il map Ry Age 58:971-3 My 7 '15

Railroads, Cable. See Cable railroads

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**Railroads, Industrial**

Car-pullers for switching at industrial plants.

Eng N 74:299 Ag 12 '15

Centrally controlled electric haulage systems. F. E. Woodford. Il Eng Soc W Pa 31:584-97; Discussion. 31:598-608 O '15

Clinton mine switch. Il Eng & Min J 100:309 Ag 21 '15

Maximum use of industrial railway possible at low cost. F. Tarrant. Eng Rec 71:653-4 My 22 '15

Methods and costs of building a macadam road using an industrial railway. R. P. Mason. Il Eng & Contr 43:322-3 Ap 7 '15

Operating Shay locomotives in winter. F. M. Leland. Il Eng & Min J 99:729-30 Ap 24 '15

Plans for the Hetch-Hetchy construction railroad. Eng N 74:935 N 11 '15

Portable track crossings in a contractor's yard. Il Eng N 74:817 Ag 12 '15

Proposed legislation against industrial railroads. Iron Age 95:313 F 4 '15

Road building with industrial equipment: twelve-car train hauled by a 20-horsepower dinky. Il Eng Rec 70:621 D 5 '14

Safety around surface tracks. Eng & Min J 99:279-80 F 6 '15

Safety in care and use of industrial railways. diag Foundry 43:105-6 Mr '15; Same. Ind Eng 15:73-5 Ag '15; Same cond. Eng M 48:603-5 Ja '15

Standard-gage railroad to haul road materials. Il Eng Rec 72:393 S 25 '15

Two important commerce commission decisions; industrial railways and car spotting charges. Ry Age 59:99-102 J1 16 '15

See also Locomotives, Industrial; Railroads, Portable

**Railroads, Narrow gage**

High capacity narrow-gauge rolling stock. Il diag Engineer 120:200-1 Ag 27 '15

**Railroads, Portable**

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**Railroads and state**

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Governmental regulation of railroads. O. W. Underwood. Ry R 56:568-5 Ap 24 '15

Relations of the railways and the public. L. E. Johnson. Ry Age 59:88-8 N 13 '15; Same cond. Ry R 57:628-8 N 13 '15

Ripley on railroads: finance and organization. W. M. Acworth. Ry Age 58:1144-5 Je 4 '15

Transportation in Europe; objections to government ownership in the United States. A. Stuckl. Ry R 56:8-9 Ja 2 '15

See also Electric railroads and state; Interstate commerce; Railroad law; Railroads—Rates

**Canada**

Bitter lesson in government railroad building; the National transcontinental railway. Eng Rec 71:478-9 Ap 17 '15

**Great Britain**

English experiment in railroading. Ry Age 58:379 F 2 '15

Prospects of state ownership in England. W. M. Acworth. Ry Age 58:47-8 Ja 8 '15

**India**

Status of Indian railways. V. Bayley. Ry Age 59:599-608 O 1 '15

**United States**

Address before International railway fuel association. A. M. Schoyer. Ry Age 58:1054 My 21 '15

Commission on relations between railways and waterways. Ry Age 58:1037-8 My 21 '15

Federal regulation of railroads—a suggestion; division of the country into districts. J. G. Code. Ry Age 58:1239-40 Je 11 '15

From a New York investment banker's point of view. A. B. Leach. Ry Age 58:10-12 Ja 1 '15

Government regulation of railway operation. S. O. Dunn. Ry Age 58:184-7 Ja 29 '15

How can railroad regulation be strengthened? A. J. County. Ry R 57:681-2 N 27 '15

Interstate commerce commission and its work. E. E. Clark. Ry Age 59:493-6 S 17 '15; Same. Eng & Contr 44:273-6 O 6 '15; Excerpts (Changes in the Interstate commerce law)

Ry R 57:400-3 S 25 '15

Interstate commerce commission refuses to decide international jurisdiction. Ry R 56:665-6 My 15 '15

Is criticism of present railway regulation justifiable? Ry Age 57:1073-4 D 11 '14

Obsolete and conflicting railroad laws should give way to uniform Federal regulation. H. W. Wack. Am Ind 15:18-19 My '15

Progress toward wiser railway regulation. Eng N 73:450-1 Mr. 4 '15

Public regulation of wages of railway employees. F. H. Dixon. Ry Age 58:329-32 Ap 30 '15

Railroad crisis: a way out [a railroad department with a cabinet officer]. R. Morris. Ry Age 58:743-4 Ap 2 '15

Railroad nationalization; plan for regional railroad companies controlled by the government. W. W. Cook. Eng M 49:411-14 Je '15

Railroads and the public—a national problem. D. Willard. Ry Age 58:703-6 Mr 26 '15; Same cond. Ry R 56:440-2 Mr 27 '15; Same cond. Eng M 49:262-6 My '15

Railroads lose lake lines. Iron Age 95:1146 My 20 '15

Railroads must divorce lake steamship lines. map Ry R 56:682-5 My 22 '15

Railroads need protection as well as regulation. E. H. Lee. Eng Rec 71:121 Ja 23 '15

Railway problem a statesman's opportunity. F. Harrison. Ry Age 57:1075-8 D 11 '14; Same cond. Ry R 56:725-6 D 12 '14

Railway problem and its solution. S. Rea. Ry Age 57:1089-91 D 11 '14; Same. Ry R 56:720-2 D 12 '14

Railway service—is it a national problem or a local issue? F. Trumbull. Ry R 57:582-4 N 6 '15

Railway troubles due to lack of public understanding. W. G. Harding. Ry Age 57:1114-16 D 18 '14

Railways must abandon control of boat lines on the Great Lakes; abstract of the Interstate commerce commission's decision. Ry Age 58:1046-7 My 21 '15

Reasons for the unpopularity of railroads. A. M. Schoyer. Ry Age 57:1053-4 D 4 '14

Regulation is vexation. J. M. Davis. Ry R 57:298-9 S 4 '15

Southern Pacific may operate steamship lines to Balboa. Ry R 56:254-5 F 20 '15

State and the railroads. H. R. Kurrie. Ry Age 58:1253-3 Je 11 '15

State governor demands return to sanity in legislation. F. B. Willis. Ry R 56:322-3 Mr 6 '15

Unsuccessful regulation. W. G. Harding. Ry R 56:724-5 D 12 '14

What is the matter with the railroads? H. Stenger. Ry Age 59:203-4 J1 30 '15

Whither are the railways drifting? J. Kruttschnitt. Ry Age 58:7 Ja 1 '15

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**Railroads in war**

Achievements of the state railway lines of Germany. W. M. Acworth. Ry Age 59:725 O 22 '15

Battle of the Marne. W. S. Hlatt. Ry Age 59:26-8 J1 2 '15; Abstract. Eng M 50:108-9 O '15



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 French railways in war time. Ry Age 58:1422-3 Je 18 '15  
 Germany's strategic railways. V: Cambon. maps Eng M 49:93-6 Ap '15  
 Great achievements of German state railroad lines. F: W. Wille. Ry Age 59:428-30 S 3 '15; Same. Sci Am S 80:218-19 O 2 '15  
 Preparedness in transportation. L: Bell. Elec Ry J 48:1088 N 27 '15  
 Railroad soldier at the front. W. S. Hiatt. Ry Age 59:811-12 O 29 '15  
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 Cold straightening of rails. R. W. Hunt. Ry Age 59:726 O 22 '15  
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 Finishing temperatures and properties of rails. G: K. Burgess and others. U S Bur Stand Tech Pa 38:1-63 '14; Summaries. Am Inst Min E Bul 93:2433-7 S '14; Iron Age 94:24-5 JI 2 '14; Ry Age 56:1592-3 Je 26 '14; J Fr Inst 178:101-3 JI '14; Sci Am 111:94 Ag 8 '14; Met & Chem Eng 12:594 S '14; Iron Tr R 55:641+ O 1 '14; Iron Age 94:837 O 8 '14; Discussion. Iron Age 94:893-4 O 15 '14; Discussion. Am Inst Min E Bul 100:767-87 Ap '15  
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 Girder and high T-rail renewals. G: L. Wilson; E. P. Roundey. Elec Ry J 46:592-3 S 18 '15  
 Girder and high T-rail renewals. W. F. Graves; R. C. Cram. Elec Ry J 46:872-3 O 23 '15  
 Good rails and sound ingots. Iron Age '95:406 F 18 '15  
 Has titanium any influence on the properties of steel? F. A. J. Fitzgerald. diags Met & Chem Eng 13:28-9 Ja '15; Same cond. Iron Age 95:309 F 4 '15; Summary. Elec Ry J 46:98 Ja 9 '15  
 High carbon 135-lb. rail. Iron Age 95:673 Mr 25 '15  
 History of the U-rail section. diags Eng N 74: 34 JI 1 '15  
 Improving the quality of steel rails for heavy traffic. Eng N 73:1047 My 27 '15  
 Inclination of the rail in economic railroad practice. J: Lundie. Ry Age 59:335-6 Ag 20 '15  
 Influence of carbon on the properties of rails. Ry Age 57:1196 D 25 '14

Life of way structure as affected by engineering and municipal conditions. P. N. Wilson. diags Elec Ry J 45:1212-13 J 26 '15  
 Making sound steel commercially. E: F. Kenney. II diags Iron Tr R 57:349-54+, 397-400 Ag 19-28 '15; Same (pt 2). Iron Age 95:1243-6 Je 17 '15; Discussion. H: M. Howe. Iron Tr R 57:400+ Ag 26 '15  
 Manganese-steel rails. R. Hadfield. II Engineer 113:564 D 11 '14  
 Mechanical elimination of seams in steel products, notably steel rails. II. W. Hunt. Iron Age 94:1334-7 D 10 '14; Same. Iron Tr R 55:1073-6 D 10 '14; Same. Sci Am S 79: 100-1 F 18 '15; Same cond. Eng N 72:1228-31 D 17 '14; Same cond. Eng Rec 70:636 D 12 '14; Same cond. Ry Age 67:1055-7 D 4 '14; Same cond. Ry R 56:85-8 Ja 16 '15; Same cond. Eng M 48:755-7 F '15; Abstract. Am Soc M E J 37:152-3 Mr '15; Discussion. Iron Age 94: 1337-8 D 10 '14; Discussion. Am Soc M E J 37:153-6 Mr '15  
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 Pointers on rail mill practice. E. Standford. Iron Tr R 57:307-9+ Ag 12 '15  
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 Production of rails in the United States in 1914. Ry Age 58:846 Ap 16 '15  
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 Rail sections as one element in steam and electric traction. P. H. Dudley. diags Gen Elec R 17:1036-46 N '14; Same. Sci Am S 78: 362-3, 370-1 D 5-12 '14  
 Railroads place orders with Canadian company. Iron Tr R 56:543-3, 578-80 Mr 18 '15  
 Railways and the steel companies. Ry Age 58:683 Mr 26 '15  
 Relation of wheel coning to rails and tie plates. W. M. Osborn. Ry R 56:357-9 Mr 13 '15  
 Signal, bonding and contact rail notes on the Northwestern Pacific. F. T. Vanatta. II Elec Ry J 46:539-41 S 18 '15  
 Sound steel for rails and structural purposes. R. A. Hadfield. II J Fr Inst 179:119-40, 663-80 F, Je '15  
 Sound steel ingots and rails. G: K. Burgess and R. A. Hadfield. II Am Inst Min E Bul 98:455-63 F '15; Same. Iron Age 95:346-8 F 11 '15; Same. Iron Tr R 56:369-72 F 18 '15; Same cond. Ry R 56:362-4 Mr 13 '15; Abstract. Engineer 119:494 My 14 '15; Discussion. Am Inst Min E Bul 101:1112-15 My '15; Discussion. Engineer 119:501-2 My 31 '15; Discussion. Met & Chem Eng 13:446-6 JI '15  
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 Special steels for track work. W. C. Cushing. Ry Age 59:747-51 O 22 '15; Abstracts. Eng Rec 72:317 S 11 '15; Iron Age 96:692 S 23 '15; Elec Ry J 46:878-9 O 23 '15  
 Steel-rail puzzle. Eng N 74:84-5 JI 8 '15  
 Suggestions regarding the determination of the properties of steel. A. N. Mittinsky. Am Inst Min E Bul 104:1697-1705 Ag '15; Abstract. Iron Age 96:462-3 Ag 26 '15; Same cond. (Proportional limit is prime factor) Iron Tr R 57:1184-6 D 16 '15; Discussion. Am Inst Min E Bul 108:2481-95 D '15  
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 United States rail production. Eng & Min J 99:683 Ap 17 '15  
 Vanadium steel rails of 105-lb. section. D. L. & W. R. II Ry R 56:249-51 F 20 '15; Summary. Ry Age 58:332 F 19 '15  
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## Corrugation

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 Rail failures show decrease since 1908. M. H. Wickhorst. Iron Tr R 57:1034 N 25 '15  
 Rail injuries from sagging. F. H. Dudley. Iron Age 95:700 Mr 25 '15  
 Rails and rail failures in relation to train accidents. Eng N 72:1177-8 D 10 '14  
 Transverse fissures the result of rail sagging. F. H. Dudley. Il Ry Age 59:1001-4 N 26 '15  
 Typical rail failures: abstract. F. A. Weymouth. Am Soc M E J 37:57 Ja '15

## Lubrication

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## Specifications

Constructive work leading to better rail specifications urgently needed. Eng Rec 72:8-10 J1 3 '15  
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 Pennsylvania's 1915 rail specifications. diag Ry Age 59:165-7 J1 23 '15; Same. Iron Tr R 57:744-6 O 14 '15  
 Rail steel and rail breakages. A. W. Gibbs. Ry R 57:147-9 J1 31 '15; Same (Working out great problems). Iron Tr R 56:1333-4 Je 24 '15; Same cond. Iron Age 96:30-1 J1 1 '15; Same cond. Ry Age 59:17-19 J1 2 '15

## Stresses

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 Internal stresses in rails found to be high. J. B. Howard. Eng N 74:855 O 28 '15  
 Lateral stresses in rails on straight track. G. L. Fowler. diag Ry Age 58:1331-8 Je 11 '15  
 Lateral stresses on rails in curved tracks. G. L. Fowler. Il Ry Age 59:319-22 Ag 20 '15

## Testing

Comparative service tests of 100-pound sections. P. S. and A. R. A.—A rails on the Pennsylvania lines. W. C. Cushing. Ry Age 57:1078 D 11 '14  
 Finishing temperatures of rails; American society for testing materials committee report. Iron Tr R 56:1307-9 Je 24 '15; Same. Ry R 57:201-3 Ag 14 '15; Same cond. Iron Age 96:19-21 J1 1 '15; Excerpts. Ry Age 59: 64-5 J1 9 '15  
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Railway business association  
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Railway development association  
 Semi-annual meeting, New York, Nov. 9-11. Ry Age 59:909-12, 938-9 N 12-19 '15

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## Railway fuel association, International. See International railway fuel association

## Railway general foremen's association, International. See International railway general foremen's association

Railway mail service  
 Efficiency in the post office department. Ry Age 57:1110-11 D 18 '14

## Government money to go by mail at expense of railroads. Ry Age 59:389-90 Ag 27 '15; Same. Ry R 57:273-4 Ag 28 '15

## Government view of government management. Ry Age 59:551-3 S 24 '15

## Hupp automatic mail exchange system. Il diag Ry R 57:436-40 O 2 '15

## Mail pay controversy. Ry Age 58:712 Mr 26 '15

## Merchants' association of New York condemns mail pay as unfair. Ry R 57:555-6 O 30 '15

## New England roads file claims for mail pay losses. Ry Age 59:164 J1 23 '15

## Western association of short line railroads. Ry Age 58:58 Ja 8 '15

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## Railway master mechanics' association, American. See American railway master mechanics' association

## Railway perishable freight association, American. See American railway perishable freight association

Railway real estate association  
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 Meeting, New York city, May 26-27. Elec Ry J 45:1023-4 My 29 '15

## Railway signal association manual. A. G. Shaver. Ry R 56:335-7 Je 26 '15

## Spring meeting, Chicago, March 15. Ry R 56: 408-11 Mr 20 '15

## 20th annual convention, Salt Lake City, Sept. 14-16. Elec Ry J 46:580-1 S 18 '15

## 20th annual convention, Salt Lake City, Sept. 14-16. Ry Age 59:561-3 S 24 '15

## 20th annual convention, Salt Lake City, Sept. 14-16. Ry R 57:405-6 S 25 '15

## Winter meeting, Chicago, March 15. Elec Ry J 45:582-3 Mr 20 '15

Railway storekeepers' association  
 12th annual convention, Chicago, May 17-20. Ry Age 58:1039-40, 1125-6 My 21-23 '15

## 12th annual convention, Chicago, May 17-20. Ry Age (Mech ed) 89:285-90 Je '15

## 12th annual convention, Chicago, May 17-20. Ry R 56:688-98 My 22 '15

## Railway telegraph superintendents, Association of. See Association of railway telegraph superintendents

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## Railways. See Railroads

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## Rain and rainfall

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## Cincinnati rainfall averages. H. R. Crohurst. Eng N 74:783 O 21 '15

## Cycles of rainfall and the new Bedford records. D. M. Wood. Eng N 72:1321-2 D 31 '14

## Day's rainfall of over 15 in. in St. Petersburg, Fla. Eng N 74:428-9 Ag 26 '15

## Determination of rainfall rates, Pawtucket, R. I. G. A. Carpenter. Il Eng N 74:148-9 J1 22 '15

## Electricity of rain; abstract. G. C. Simpson. Elec W 66:251 J1 31 '15

## Erie rainstorm and flood. Il map Eng N 74: 326-9 Ag 12 '15

## Extraordinary rain in St. Louis with study of runoff. W. W. Horner. Eng N 74:742-3 O 14 '15

## Havana rainfall records. F. M. Aguirre. Eng N 74:830 O 23 '15

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- Intensity of rainfall studied at Columbus, Ohio. C: Herrick. Eng N 74:878-9 O 7 '15  
 Long-term rainfall records in New York state. E: H. Sargent. Eng N 74:403 Ag 26 '15  
 Meteorological analysis of storm indicates similarity to hurricane of 1900. map Eng Rec 72:276-8 Ag 28 '15  
 New Orleans record for succession of storms broken. map Eng Rec 72:562-3 N 6 '15  
 Relative reliability of long-time rainfall observations. F. H. Millard. Eng N 73:1212 Je 24 '15  
 Restricted stream channel responsible for Erie flood damage. T. El. Seelye. II Eng Rec 72:186-9 Ag 14 '15  
 Run-off from sewered areas; final report of committee. bibliog II diag Boston Soc C E J 1:291-322 Je '14; Abstract. Munic J 37:73-4 Ji 16 '14  
 Sewage measurement and automatic control of storm overflow at Pawtucket. R. I. G: A. Carpenter. II diag Boston Soc C E J 1:419-27 O '14

See also Rain water pipes; also New Orleans—Hurricane, 1915

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- Rain water leaders. E. R. Porter. diag Dom Eng 73:230-1, 262-3 N 20-27 '15

**Ramps**

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- Getting the range: instruments which make gun fire effective at distances up to ten miles. II Sci Am 113:220-3 Mr 6 '15  
 Range-finder; how distances are measured on the battlefield. II Sci Am S 80:20 Ji 10 '15  
 Range-finders, diag Sci Am S 79:23 Ja 9 '15  
 Science in the war and after the war. J. A. Fleming. Sci Am S 80:338-9 N 27 '15

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- Accuracy of gun fire. H. J. Jones. Engineer 120:239-40 S 10 '15

**Rapid transit**

- Autos and the electric car. J: A. Beeler. Elec Ry J 46:590-2 S 18 '15  
 Consideration with regard to the rapid transit problem in cities. G: F. Swain. Eng Soc W Pa 31:239-54 Ap '15

See also Electric railroads; Elevated railroads; Railroads; Street railroads; Subways

**Rare earths.** See Barths, Rare**Rasak**

- Logging Rasak and Lagan. T. R. Helms. II Am For 21:1050-3 N '15

**Rat proofing**

- Concrete a plague-eradicator in New Orleans. H. P. Letton. Eng Rec 71:325-6 Mr 13 '15

**Rates**

- Reasons for different rates. Power 41:383, 684-5 Mr 16, My 18 '15

See also Electric power—Rates; Gas rates; Prices; Public service corporations—Rates; Water rates

**Rattan**

- Rattan supply of the Philippines. J: R. Arnold. U S Bur For & Dom Com 95:1-40 '15

**Ray Consolidated copper company, Ray, Arizona**  
Report for 1914. Eng & Min J 99:707-8 Ap 17 '15

- Underground mining systems. L. A. Blackner. II diag Am Inst Min E Bul 102:1249-90 Je '15

**Razing.** See Wrecking**Reactance coils**

- Current-limiting reactors. W. H. Dann and H. H. Rudd. Power 42:244-5 Ag 17 '15

- Discussion on reactance by American Institute of electrical engineers. Am Inst E E Pro 84:1309-22 Je '15

- Fireproof current-limiting reactors. II Elec W 66:376 Ag 14 '15

- Laboratory-built reactance of large capacity. II Elec R & W Elec'n 67:944-5 N 20 '15

- Location for current-limiting reactors. Elec W 64:1159-60 D 12 '14

- Protective reactance coils. II diag Elec W 65:945-9 Ap 10 '15

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- Appraisal of city real estate. W: E. Davies. Eng & Contr 43:167-70 F 24 '15

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- Real estate association, Railway. See Railway real estate association

**Real estate business**

- Community stupidity; how real-estate promotion creates congestion and reduces values. plans F: L. Ackerman. Am Inst Arch J 3:193-7 My '15

- Cooperation of the real-estate developer and town-planner in land subdivision. P. A. Harach. Am Inst Arch J 3:308-10 Ji '15

**Accounting**

- Real estate subdivisions. S. Walton. J Account 19:330-4 Ap '15

**Real property.** See Real estate**Reamers**

- Heavy duty electric reamer. II Ry Age (Mech ed) 89:199 Ap '15

- Portable pipe-reaming machine. II Power 42:123 Ji 27 '15

**Rebates of duties.** See Drawbacks**Receipts.** See Chemistry, Technical; Red fire**Reclamation of land**

- Construction methods and plant for diversion and drainage works for Little River drainage district in Missouri. Eng Rec 70:812-14 D 5 '14

- Cost of electric dredging for land reclamation, San Diego. Cal. L. R. W. Allison. Eng & Contr 44:295-6 Ag 4 '15

- Cost to the U. S. reclamation service of draining over-irrigated lands. Eng & Contr 43:2 Ja 6 '15

- Neponset river reclamation. W. B. Conant. II Munic J 39:254-5 Ag 19 '15

- River improvement for public health reclaims 10,000 acres of fertile land. R. W. Sherman. II map Eng Rec 71:738-9 Je 12 '15

- Simple construction reclaims 7000 acres of rich land at low cost, Pitt Meadows, B. C. H. M. Burwell. II diag map Eng Rec 72:330-1 S 11 '15

See also Drainage; Irrigation

**Reclamation service (United States)**

- Changed reclamation service. Eng Rec 72:125 Ji 31 '15

- Changed reclamation service again. Eng Rec 72:671-2 N 27 '15

- Electrical features of the U. S. reclamation service. F. H. Newell. Am Inst E E Pro 33:1583-98 O '14; Summary. Elec W 64:753 O 17 '14; Discussion. Am Inst E E Pro 34:675-9 Ap '15

- Multiple-arch diversion dam at Three Miles Falls, Oregon. H. D. Newell. II diag Eng N 73:1009-12 My 27 '15

- One year's work of the U. S. reclamation service. Eng Rec 70:848 D 12 '14

- Reclamation service has unique library. Eng N 74:787 O 21 '15

- Shall the irrigation settlers be given relief? Eng Rec 72:680-1 N 27 '15

- Suggested itinerary for engineers desiring to visit reclamation service projects. Eng N 73:363-4 F 13 '15

- Uncle Sam in the movies. C. J. Blanchard. II Am For 21:532-40 Ap '15

**Recorders**

- Coasting recorders in New York. II Elec Ry J 46:572-5 Mr 20 '15

- Electrical long distance transmitting, indicating and recording system. II diag Ind Eng 14:395-6 O '14; Colliery 35:281-2 D '14; Heat & Ven 11:57-9 D '14; Mach 21:930-1 D '14; Met & Chem Eng 12:797-8 D '14; Eng N 73:1136-7 D 8 '14; Elec R & W Elec'n 65:1100-1 D 5 '14; Power 40:916-17 D 29 '14

- Graphic recorder for the Cole pitometer. II diag Eng N 72:875 My 6 '15

**Recorders—Continued**

- Machine-tool performance diagnosis; lessons of the power-time characteristic and value of automatic records on analyzing productive operations. *Elec W* 65:417-18 F 13 '15
- New type of flow recorder. *Il Heat & Ven* 12: 52-3 Ag '15
- Panama-Pacific exposition. F. R. Low. *Il Power* 42:444-7 S 28 '15
- Protection and control of industrial electric power. C. P. Steinmetz. *Il Gen Elec R* 18: 983-5 O '15
- Recorder for passenger-mile earnings. *Il Elec Ry J* 45:948-9 My 15 '15
- Recording power plant operations. J. C. Smallwood. *Il diags Eng M* 49:818-86; 50:33-46, 262-75, 382-9 S-D '15
- Records of radio time signals made with a physiological recorder. C. W. Waggoner. *Il Sci Am S* 79:162 Mr 6 '15
- Speed control on dreadnought Pennsylvania. *Il Int Marine Eng* 20:200-1 My '15
- See also Carbon dioxide recorders; Temperature recorders

**Records**

- Card record of employees. C. E. Fairbanks. *Eng M* 48:573-5 Ja '15
- Card record of employees. S. G. Koon. *Eng M* 49:88-90 Ap '15
- Checking freight charges. P. A. Smith. *Iron Age* 95:586 Mr 4 '15
- Convenient operating reports for steam plants. *Elec W* 65:1623-6 Je 19 '15
- Electrical repair record system; methods of National tube co. J. F. Kelly. *Iron Tr R* 56: 1064-7 My 27 '15; Same cond. *Iron Age* 95: 1070 My 13 '15; Discussion. *Iron Tr R* 56: 1067-9 My 27 '15
- Estimate record blanks in book form. *Metal Work* 83:201 Ja 29 '15
- Export price records. H. A. Russell. *Iron Age* 96:1114-15 N 11 '15
- How to use statistics in management. F. G. Coburn. *Eng M* 49:717-23 Ag '15
- Keep record of electrical repairs. G. E. Stoltz. *Iron Tr R* 56:967-9+ My 13 '15; Same cond. (Steel mill electric motors) *Iron Age* 95:952-3 Ap 29 '15
- Log sheets at Delray station. N. G. Reinacker. *Power* 42:482-4 O 5 '15
- Method of recording and filing information concerning bids received and bidders. *Eng & Contr* 44:92 Ag 4 '15
- Model record of distribution of construction plant. *Il Eng N* 74:218-19 Ji 29 '15
- Modern plating department order system. C. H. Fleischer. *Metal Ind n s* 13:151-2 Ap '15
- Office methods for the electrical contractor. *Elec R & W Elec'n* 66:560-3 Mr 20 '15
- Record forms for the electrical contractor. *Elec R & W Elec'n* 66:724-5 Ap 17 '15
- Record keeping in the power plant. S. J. H. White. *Power* 41:243-4 F 16 '15
- Recording power plant operations: the records; combining, averaging, integrating, and filing; special planimeters. J. C. Smallwood. *Il Eng M* 50:382-9 D '15
- Records for the purchasing department. H. A. Russell. *Iron Age* 96:308-9 Ag 5 '15
- Springfield water-works. *Il Eng N* 74:443-5 S 2 '15
- Systems for the engineer and contractor. T. Barwick. *Heat & Ven* 11:27-34 N; 15-21 D '14; 12:18-22 Ja '15
- See also Electric railroads—Records; Foundry records; Railroads—Records; Street railroads—Records
- Records, Municipal.** See Municipal records
- Recreation buildings**
- Chicago municipal pier. *Il diags Eng N* 74: 193-7 Ji 29 '15
- Frame building heated by warm air system. M. H. Reessler. *Il plans Metal Work* 84:400-1 S 24 '15
- Recreation centers.** See Social centers
- Rectangular pressure vessels. H. J. Vander Eb. *Locomotive* 30:164-9 Ap '15
- Rectifiers, Electric current.** See Electric current rectifiers
- Red Cliff, Colorado**
- Geology and ore deposits of Red Cliff, Colorado. A. H. Means. *Il Econ Geol* 10:1-27 Ja '15
- Red fire**
- Good mixture for red fire. G. B. Jackson. *Sci Am* 113:291 O 2 '15
- Safe red fire mixture. *Sci Am* 113:161 Ag 21 '15
- Red gum**
- Use of native woods for interior finish. C. M. Price. *Il Brickb* 24:221-2 S '15
- Reduction, Chemical**
- Rate of reduction of mercuric chloride by sodium formate. G. A. Linhart. *Am Chem Soc J* 37:70-8 Ja '15
- Reduction of copper oxide in alcohol vapor in reducing sugar determinations and copper analysis. A. Wedderburn. *J Ind & Eng Chem* 7:610-11 Ji '15
- Redwood**
- Features of the home of redwood. J. H. Browne. *Il Bldg Age* 37:36-40 Ag '15
- Use of native woods for interior finish. C. M. Price. *Il Brickb* 24:285 N '15
- Reflection (light)**
- Air shaft illumination as studied by models. C. H. Sharp. *Illum Eng Soc* 9:598-610 no 7 '14
- Diffusing media; papers and inks. *Illum Eng Soc* 10:379-87 no 5 '15
- Mixed specular and diffuse reflection; with discussion. E. G. Nutting. *Illum Eng Soc* 9: 571-8 no 7 '14
- Reflection from painted surfaces. L. Bell. *Elec W* 65:211-12 Ja 23 '15; Same. *Am Gas Light J* 102:91 F 8 '15; Same cond. *Ind Eng* 15: 80 Ag '15
- Tests of some possible reflecting power standards. P. G. Nutting, L. A. Jones and F. A. Elliott. *Illum Eng Soc* 9:592-7 no 7 '14
- Window envelopes. *Illum Eng Soc* 10:394-6 no 5 '15
- Reflectors**
- Bowl-type metal reflectors. *Il Elec R & W Elec'n* 67:634 O 2 '15
- New developments in the projection of light. L. C. Porter. *Il Illum Eng Soc* 10:33-54 no 1 '15
- Parabolic asbestos reflector. *Il Elec R & W Elec'n* 67:440 S 4 '15
- Prismatic-glass window reflector. *Il Elec R & W Elec'n* 67:440-1 S 4 '15
- Silvered-mirror reflectors for flood lighting. *diags Elec W* 66:825 O 9 '15
- See also Light projection
- Reforestation.** See Forest planting
- Refraction**
- Refractometry. G. A. Shook. *Met & Chem Eng* 13:572-6, 630-5; 13:19-22 S-O '14, Ja '15
- Refractometer**
- Refractometry. G. A. Shook. *Met & Chem Eng* 12:572-6, 630-5; 13:19-22 S-O '14, Ja '15
- Refractory materials**
- Carborundum products, their manufacture and uses as abrasives and refractories. C. E. Hawke. *Iron Age* 96:1121 N 11 '15
- Difference between English and German refractory materials. A. B. Searle. *Am Gas Light J* 103:268-9 O 25 '15
- Refractories of the Rocky mountain region, and some of their products. J. C. Ballar. *Il Met & Chem Eng* 13:267-8 Ap '15
- Refractory materials and the war. A. B. Searle. *Sci Am S* 79:169 Mr 13 '15
- Selecting refractories for the foundry; abstracts. W. H. Kelley. *Iron Age* 94:942-3 O 22 '14; *Ind Eng* 14:469-71 D '14
- Thermal conductivity of refractories. B. Dudley, jr. *Met & Chem Eng* 13:315-16 My '15
- Thermal insulation of high-temperature equipment. F. A. Boeck. *diags Am Inst Min E Bul* 104:1539-50 Ag '15; Excerpts. *Iron Age* 96:363-4 Ag 12 '15; *Sci Am S* 80:815 N 13 '15; Discussion. *Am Inst Min E Bul* 108:2513-19 D '15
- Zirconia, a new refractory. H. C. Meyer. *Il Met & Chem Eng* 12:791-3; 13:268-6 D '14, Ap '15
- See also Fire brick; Ganalster; Magnesite; Silundum

Refrigerating engineers, American society of.  
See American society of refrigerating engineers

#### Refrigeration and refrigerating machinery

Ammonia a heat vehicle. A. Johnson. Power 41:737 My 25 '15; Same. Sci Am S 80:55 J1 24 '15

Applications of congealed brine. R. L. Shipman. Power 42:322-3 Ag 17 '15

Automatically operating refrigerating apparatus autotrigor; abstract. P. Ostertag. diag Am Soc M E J 37:479-80 Ag '15

Blast-furnace plant auxiliaries and general arrangement; dry blast. J. E. Johnson, jr. diags Met & Chem Eng 18:429-39 J1 '15

Cold-air refrigeration plant. Power 42:674 N 16 '15

Columbus refrigerating plants. II Power 42:334-6 S 7 '15

Compressor trouble due to throttled suction line. T. G. Thurston. diag Power 41:374 F 23 '15

Decomposition of ammonia and the chances of explosions. F. L. Fairbanks. Power 42:715-17 N 23 '15

Design, construction and operation of a 1000-ton ammonia compression refrigerating machine. F. L. Fairbanks. diag Am Soc M E J 37:560-1 S '15

Detecting ammonia leaks. C. E. Anderson. Power 40:851-2 D 15 '14

Detecting ammonia leaks. T. G. Thurston. Power 41:101 Ja 19 '15

Don'ts for refrigerating engineers. T. G. Thurston. Power 41:607-9 My 4 '15

Electricity in a cold-storage plant. II Elec R & W Elec'n 67:357-9 Ag 28 '15

Electricity in a wholesale grocery establishment. II Elec R & W Elec'n 67:503-6 S 18 '15

English mechanical engineers' refrigeration report. Power 40:828-9 D 8 '14

Equipment and methods in largest refrigeration system: Quincy market cold storage & warehouse co., Boston. C. H. Bromley. II Power 40:798-803, 843-4, 878-83, 914-16; 41:9-14 D 8 '14-Ja 5 '15

Experiences of refrigerating troubleman. C. E. Anderson. diags Power 42:330-1 S 7 '15

Experiences of refrigerating troubleman. T. G. Thurston. Power 42:631-2 O 12 '15

Frost 16 feet deep found under refrigerator plant. J. N. Jensen. II Eng Rec 72:297 S 4 '15

Getting capacity in the refrigerating plant. A. G. Solomon. Power 41:802-3 Je 15 '15

How electricity is used in handling seafood. II Elec W 66:450-1 Ag 28 '15

Inconspicuous losses in refrigerating plants. P. Neff. Power 41:778 Je 8 '15

Initial charge with anhydrous. H. G. Gibson. Power 42:881 N 16 '15

Large electrically operated refrigerating machine. II Elec W 65:1204-5 My 8 '15

Mechanical refrigeration in manufactures. C. E. Lucke. J Ind & Eng Chem 7:462-3 Je '15

New Morrison hotel plant, Chicago. T. Wilson. II Power 42:111-12 J1 27 '15

Oil troubles experienced in the refrigeration system. A. G. Solomon. Power 42:234-5 Ag 17 '15

Operating a refrigerating plant. T. G. Thurston. Power 42:186-6 Ag 10 '15

Operating variable temperature refrigeration system. A. L. Rice. Power 42:709-10 N 23 '15

Overhauling the refrigeration plant. F. E. Matthews. Power 42:579-80, 606-8 O 26-N 2 '15

Power requirements of ammonia compressors. W. N. McKee. Power 41:158-60 F 2 '15

Practical use of thermometers in refrigerating plants. P. Neff. Power 42:417-18 S 21 '15

Refrigerating engineers meet. Power 40:866-7 D 15 '14

Refrigeration by gas. H. M. Soper. Am Gas Light J 102:412-13 Je 28 '15

Refrigeration in France. L. Marchia. Power 42:628-9 O 12 '15

Refrigeration night, Chicago section. A. S. M. E. Power 41:489-91 Ap 6 '15

Removing scale from ammonia condensers. A. G. Solomon. Power 42:84-5 J1 20 '15

Similar features of boiler and refrigeration systems. T. G. Thurston. Power 42:437-8 S 28 '15

Standard in refrigeration. L. A. Simmons. Gen Elec R 18:1171-2 D '15

Suggestions on overhauling a refrigeration plant. T. G. Thurston. Power 41:328-9 Mr 9 '15

Survey of the refrigeration field as it exists today. H. L. Holleman. Gen Elec R 18:65-7 Ja '15

See also Ammonia compressors; Cold storage; Cooling; Ice—Manufacture; Refrigerator cars

#### Cost

Electrical refrigeration at 11.7 cents a day. II Elec W 65:1203 My 8 '15

Initial and operating costs of refrigeration plants. R. P. Kehoe. Power 41:710-11 My 25 '15

#### Laws and regulations

Massachusetts ammonia safety regulations. F. L. Fairbanks. diags Power 42:753-6 N 30 '15

New York's refrigeration ordinance. Power 42:68 J1 13 '15

Regulations governing refrigerants in New York city. Power 40:862 D 15 '14

#### Safety devices

Operating refrigeration plants safely. H. W. Geare. diag Power 41:307-8 Mr 2 '15

Safety in handling refrigerants. A. G. Solomon. Power 41:170-1 F 2 '15

Safety in refrigerating plants. Power 41:879-80 My 18 '15

See also Refrigeration—Laws and regulations

#### Testing

Air testing in the refrigeration plant. A. G. Solomon. Power 41:339-40 Je 22 '15

Performance of refrigeration plant at Lubeck, Germany. R. Stetfeld. Power 41:212-14 F 9 '15

#### Refrigeration in transportation

Refrigerating plant on the first American steamer to bring frozen and chilled meats from the Argentine. II diags Int Marine Eng 20:150-1 Ap '15

See also Refrigerator cars

#### Refrigerator cars

Baltimore & Ohio milk refrigerator car. II diags Ry Age (Mech ed) 88:621-3 D '14

Detroit United builds refrigerator car. C. L. Keller. II diag Elec Ry J 46:1044 N 20 '15

#### Refrigerators

Measurements for the household. U S Bur Stand Circ 55:60-3 '15

Refrigerator wastes and connections. J. Graham. diags Dom Eng 73:36-7 O 2 '15

#### Refuse, Utilization of

Fertilizer from municipal waste. J. W. Turrentine. Munic J 39:739-40 N 11 '15

Making fuel out of garbage. W. D. Hornaday. II Munic Eng 48:304-5 My '15

#### Refuse and refuse disposal

Akron is building sewage and garbage disposal plants. plan Eng Rec 71:63 Ja 8 '15

Analysis of Chicago refuse. Munic J 38:814-15 Mr 11 '15

Atlanta burns its garbage for 91 cents per ton. E. R. Conant. Eng Rec 72:532 O 30 '15

Disposal of garbage and refuse in Seattle. Munic Eng 48:118-19 F '15

District sanitary disposal plant. F. Spiegelburg. II Sci Am S 80:300 N 6 '15

Emergency garbage disposal in Chicago. G. B. Young. II Eng Rec 70:666-7 D 19 '14

Experiences in refuse collection and disposal with reference to odors. S. A. Greeley. Eng & Contr 42:576 D 23 '14

Garbage and refuse disposal and experiences with incineration at San Francisco. A. J. Cleary. II plan Eng N 73:301-4 F 18 '15

Garbage collection and incineration in Sewickley, Pa. E. E. Duff, jr. II Munic J 30:719-23 N 11 '15

Garbage disposal at Reading. W. C. Matthias. II diag Munic J 39:544-5 O 7 '15

Garbage-disposal propositions at San Francisco. Eng N 74:232 J1 29 '15

**Refuse and refuse disposal—Continued**

- Method and cost of collecting and incinerating garbage at Racine, Wis. P. H. Connolly. Eng & Contr 44:311-12 S 15 '15
- Milwaukee bureau of street sanitation. Munic J 37:888-90 D 17 '14
- Prevention of odors at city refuse disposal works. R. Hering. Eng & Contr 43:81-2 Ja 27 '15
- Recent refuse disposal practice, with list of reduction plants in the United States. W. F. Morse. Munic J 37:848-51 D 10 '14; Abstract. Eng N 73:576-6 Mr 25 '15
- Refuse collection and disposal. E. N. Stacy. II Assn Eng Soc J 54:12-34 Ja '15
- Refuse collection and disposal; information from several hundred cities concerning methods and costs. Munic J 39:722-39 N 11 '15
- Refuse disposal at Savannah. E. R. Conant. Munic J 38:186-8 F 11 '15
- Summer municipal wastes: Chicago street department makes analyses. Eng Rec 71:84-5 Ja 16 '15
- See also* Refuse collection; Refuse incinerators; Sewage; Sewage disposal; Street cleaning; Trade waste; Waste products; Waste removal; Water pollution

**Reduction plants**

- City and state power plants at Columbus, Ohio. T. Wilson. II Power 42:323-4 S 7 '15
- Cobwell garbage-reduction process. Eng N 72:1249 D 24 '14
- Data concerning reduction plants; tabulation. Munic J 39:734 N 11 '15
- Essential features in the design and operation of refuse disposal plants. I. S. Osborn. Eng & Contr 44:166 S 1 '15
- Garbage and rubbish disposal in Los Angeles. S. C. Simons. II plan Munic J 38:799-808 Je 10 '15
- Garbage reduction at Columbus, Ohio, 1918 and 1914. Eng N 73:1030 My 27 '15
- Garbage reduction in Columbus. II Munic J 39:846-7 D 2 '15
- Investigations on the nature and elimination of odors and dust from a garbage reduction plant. H. W. Mahr and A. C. Krafft. II diag J Ind & Eng Chem 7:778-85 S '15; Abstract. Eng N 74:547 S 16 '15
- Municipal garbage-reduction plant, Schenectady, N. Y. S. Gertz. II plan Eng N 73:820-2 Ap 29 '15
- New methods of odor elimination at garbage plants indicated by New York tests. I. S. Osborn. Eng Rec 72:16-17 J1 3 '15
- Operations of the Cleveland garbage-reduction works. Eng N 73:527 Mr 18 '15
- Recent refuse disposal practice, with list of reduction plants in the United States. W. F. Morse. Munic J 37:848-51 D 10 '14; Abstract. Eng N 73:576-6 Mr 25 '15
- Reduction of New York's garbage. II map Munic J 39:35-9 J1 8 '15
- Success of two municipal garbage-reduction plants. Eng N 73:1042 My 27 '15
- Refuse collection**
- Collecting ashes and garbage in Passaic, N. J. A. Reid. Munic J 38:35-6 Ja 14 '15
- Garbage and refuse collection and disposal in St. Louis, Mo. Munic Eng 48:340-1 Je '15
- Garbage collection and incineration at Norfolk, Va. W. R. Russell. II diag Munic J 38:183-5 F 11 '15
- Garbage collection and incineration in Sewickley, Pa. E. E. Duff, jr. II Munic J 39:719-22 N 11 '15
- Garbage collection in a small city. L. J. Wertheim. II Munic J 38:36-7 Ja 14 '15
- Garbage collection studies in Chicago justify continued use of horses. Eng Rec 72:52-3 J1 10 '15
- Haul of municipal refuse. L. L. Tribus. Munic J 39:190 Ag 5 '15
- Method and cost of refuse collection and disposal in Los Angeles, Cal. A. C. Hansen. Eng & Contr 44:265-8 S 29 '15
- Refuse collection and disposal. E. N. Stacy. II Assn Eng Soc J 54:12-34 Ja '15

- Refuse collection and disposal; information from several hundred cities concerning methods and costs. Munic J 39:722-39, 812-14 N 11, 25 '15; Correction. 39:846 D 2 '15
- Refuse collection in Chicago. Munic J 39:841-2 D 2 '15
- Refuse disposal in Richmond. J. W. Cloey. II Munic J 38:466-8 Ap 8 '15
- Refuse dumped from the cart to scow without scattering. II Eng Rec 72:313-16 S 11 '15
- Sanitary method of garbage collection. W. H. McLain. II Munic Eng 49:61-2 Ag '15
- Street cleaning appliances: exhibits at the New York street cleaning department exhibition. II Munic J 37:858-66 D 10 '14
- See also* Refuse receptacles

**Cost**

- Cost of collection and method of disposal; tabulation. Munic J 39:725-30 N 11 '15
- Costs of collecting, hauling, transferring and transporting municipal refuse. S. A. Greeley. Eng & Contr 43:376-7 O 21 '14
- Differences in cost of refuse collection. Munic J 39:845-6 D 2 '15
- Extent and cost of use of motor trucks in municipal refuse collection service. S. A. Greeley. Eng & Contr 44:286-7 O 13 '15
- New York street cleaning. II Munic J 39:842-4 D 2 '15
- Refuse incinerators**
- All-steel refuse incinerator, Roanoke, Va. J. C. Woodman. II diag Eng N 73:678-80 Ap 8 '15
- Data concerning incinerators; tabulation. Munic J 39:738-4 N 11 '15
- Design and operation features of refuse destructors. R. O. Wynne-Robert. Eng & Contr 42:501-3 N 25 '14
- Design and operation of small municipal refuse incinerator at International Falls, Minn. E. W. Kibbey. diag Eng & Contr 43:477-8 My 26 '15
- Electricity from refuse destructors; abstract. A. J. Abraham. Elec W 68:561 S 18 '15
- Garbage and refuse disposal and experiences with incineration at San Francisco. A. J. Cleary. II plan Eng N 73:301-4 F 18 '15
- Garbage and refuse incinerator at Palo Alto, Calif. N. H. McKay. plans Eng N 73:432-3 Mr 4 '15
- Garbage and rubbish incinerator recommended for Albany, N. Y. Eng N 73:565 Mr 25 '15
- Garbage collection and incineration at Norfolk, Va. W. R. Russell. II diag Munic J 38:183-5 F 11 '15
- Garbage disposal at Reading. W. C. Matthias. II diag Munic J 39:544-5 O 7 '15
- Incinerators for small towns. II Munic J 37:845-6 D 10 '14
- List of destructor installations constructed between 1906 and 1914, inclusive. Munic J 37:849 D 10 '14
- Refuse collection and disposal. E. N. Stacy. II Assn Eng Soc J 54:12-34 Ja '15
- Refuse destructor at Savannah, Ga. E. R. Conant. II Munic Eng 47:416-23 D '14; Abstract. Eng N 73:256-8 F 11 '15
- Refuse incinerator at Petersburg. II plan Munic J 38:311-13 Mr 11 '15
- Refuse incinerator at Portland, Ore. W. G. Heiber. Munic J 39:774-5 N 18 '15
- Refuse incinerator, Florence, S. C. M. Maffitt. II diag Eng N 73:1166-7 Je 17 '15
- Refuse incinerator guarantees are too strict for practical fulfillment. Eng Rec 71:777 Je 19 '15
- San Francisco rejects completed garbage incinerator. Eng Rec 70:sup275-6 D 5 '14
- Seattle's refuse destructors; reasons for discontinuing the use of one of them. Munic J 39:40-1 J1 8 '15
- Six types of construction camp garbage and refuse incinerators. diag Eng & Contr 44:163-5 S 1 '15
- Refuse receptacles**
- Requirements for refuse receptacles; materials and sizes specified by several score of cities. Munic J 39:780-1 N 18 '15

## Regina, Saskatchewan

## Water supply

Design, construction and cost of new water works reservoir at Regina. R. O. Wynne-Roberts. *Il diags Eng & Contr* 43:285-7 Mr 31 '15

## Reindeer

Dr. Grenfell's missions in Labrador. H. H. Heath. *Il Inland Ptr* 55:53-4 Ap '15

Reinforced concrete. See Concrete, Reinforced  
Reinforcing bars, Steel. See Steel reinforcing bars

## Relativity

Developments in electromagnetism. E. Bloch. *Sol Am S* 79:338-9 My 29 '15

## Relays

Automatic device for timing relay and fuse operation. plan Elec W 55:608-9 Mr 6 '15  
General electric compensator type relay. *Il Ry E* 57:544 O 23 '15; Elec R & W Elec'n 67:734 O 16 '15; Iron Age 96:921 O 21 '15; Iron Tr R 57:895 N 4 '15; Power 42:680-1 N 18 '15  
Installation of reverse-energy relays. A. R. Haynes. *diags Elec W* 65:221-2 Ja 23 '15  
Photoelectric relay. J. Kunz. *diag Elec W* 65:934 O 23 '15  
Recent developments in switchboard apparatus. E. H. Beckert. *Il diag Gen Elec R* 18:646-7 Jl '15  
Relay for protecting single a. c. tie lines. *Il diag Elec Ry J* 46:593-600 S 18 '15  
Selective time element of relays. P. Mac-Gahan. *diags Elec W* 65:597-9 Mr 6 '15  
Telegraph relays: abstract. H. W. Malcolm. *diags Elec W* 65:403-4 F 13 '15

## Relief maps

Great relief map of the Panama canal. *Il Eng N* 73:337-8 F 18 '15  
Largest spherical relief map in the world; exhibit of the Denver & Rio Grande and affiliated railroads. *Il Sci Am* 112:589 Je 12 '15

## Rensselaer polytechnic institute, Troy, N. Y.

New buildings. *Il Eng N* 74:476 S 2 '15

## Rent

Distributing overhead expense. N. T. Ficker. *Eng M* 50:58-64 O '15  
Rents in public utility accounting. J. Bauer. *J Account* 20:21-7 Jl '15

See also Landlord and tenant

## Repair ships

Equipment of repair plant of U. S. S. Vestal. L. J. Connolly. *Il Metal Work* 84:670-1 N 26 '15  
Floating foundry of the U. S. S. Vestal. F. M. Perkins. *Il plan Foundry* 43:211-15 Je '15

## Repair shops

Economic limit of the repair shop. V. W. Berry. *Elec Ry J* 46:1027 My 29 '15  
Electrical repair record system; methods of National tube co. J. F. Kelly. *Iron Tr R* 56:1065-7 My 27 '15; Same cond. *Iron Age* 95:1070 My 13 '15; Discussion. *Iron Tr R* 56:1067-9 My 27 '15

Homestead repair shops. *Il plan Iron Tr R* 56:859-65 Ap 1 '15

Repair department a profitable side line. *Metal Work* 84:598 N 5 '15

Shops for repair purposes at Gary. *Il plan Iron Tr R* 56:277-81+ F 4 '15

Steel plant repair system. B. D. Quarrie. *Iron Age* 94:1316-17 D 8 '14

See also Electric railroads—Shops; Mine shops; Railroads—Sanitation; Railroads—Shops

## Repair shops, Municipal

Central plant at Chicago will handle repairs to all city equipment. *Il plan Eng Rec* 72:266-7 Ag 28 '15

Chicago's municipal repair shop. C. C. Saner. *Il Munic Eng* 48:289-91 My '15

## Repairing

Emergency portable repair kit. *Il Power* 42:235-6 Ag 17 '15

See also Repair ships; Repair shops; also subhead Repair under various subjects, e. g. Boilers—Repair

## Reporting

Cub reporter. H. Gilmore. *Inland Ptr* 55:327-9 Je '15

How a reporter won his spurs. J. T. Elliott. *Inland Ptr* 55:33-41 Ap '15

Reports, Engineering. See Engineering reports  
Reproduction

See also Fecundity; Parthenogenesis

## Reptiles

Making natural history popular; attractive museum groups of our common pond reptiles. W. H. Miller. *Il Sci Am S* 80:328-9 N 20 '15

Research, Chemical. See Chemical research

Research, Industrial. See Industrial research

Research, Medical. See Medical research

Research, Scientific. See Scientific research

## Research corporation

Practical applications of electrical precipitation and progress of the Research corporation. L. Bradley. *bibliog Il Am Inst E E Pro* 34:623-65 Ap '15

Resemblances. See Heredity

## Reservoirs

Blanket versus cut-off wall for sealing bank at Cedar river dam. D. C. Henny. *Eng Rec* 71:656-7 My 22 '15

Building the earth embankment for Hill View reservoir. A. W. Tidd. *Il plan Eng N* 74:500-5 S 9 '15

Construction features of the North side reservoir of the water works of the city of Pittsburgh. E. B. Lanpher and J. S. Cole. *Il Eng Soc W Pa* 30:689-88 O '14; Same. *Eng & Contr* 42:577-9 D 23 '14; Same cond. *Munic J* 38:558-62 Ap 22 '15; Discussion. *Eng Soc W Pa* 30:686-92 O '14

Cutoff-wall and rock grouting at the Milton reservoir embankment. *Il diags map Eng N* 73:468-71 Mr 11 '15

Design and cost of new middle system reservoir, Duluth. *Eng & Contr* 43:318 Ap 7 '15

Design, construction and cost of new water works reservoir at Regina, Sask. R. O. Wynne-Roberts. *Il diags Eng & Contr* 43:285-7 Mr 31 '15

Evaporation and seepage from irrigation reservoirs. K. A. Heron. *Il Eng N* 74:294-5 Ag 12 '15

Excavating and timbering the very deep trenches required in reservoir and other dam construction. J. M. M. Greig. *plans Eng & Contr* 44:170-8 S 8 '15

Hauling material on the North side reservoir, Pittsburgh. *Eng N* 73:173-4 Ja 28 '15

Improving Liberty, N. Y., water supply. H. W. Taylor. *Il Munic J* 38:390-1 Mr 25 '15

Influence of reservoir bottoms on stored water. W. F. Smith. *Il Eng N* 72:1289-92 D 31 '14

Leakage from Cedar lake reservoir, Seattle water-supply. C. E. Fowler. *Il map plan Eng N* 73:112-15 Ja 21 '15

Nidd valley reservoir of Bradford, England, water works. *Il Munic Eng* 48:170-1 Mr '15

Provo reservoir company's irrigation project. C. S. Jarvis. *Il Eng N* 74:394-5 Ag 26 '15

Rectangular fire-service reservoir. W. G. Potter. *Il Eng Rec* 71:260-1 F 27 '15

Relining a small bricklined water works reservoir with asphalt and concrete at Irwin, Pa. J. M. Rice. *Il diags Eng & Contr* 43:373-4 Mr 24 '15

Repairing and waterproofing the Nashville water-works reservoir. W. W. Southgate. *Il diags Eng N* 73:849-52 My 6 '15

Reservoir sites on the Colorado river. L. C. Hill. *map Eng Rec* 70:670-1 D 19 '14

St. Maurice river storage project, Quebec. *Eng & Contr* 43:sup29-30 Ja 16 '15

Seepage at Cedar river reservoir. *Eng Rec* 71:62 Ja 9 '15

Solving the silt problem: reservoirs suggested for muddy streams of the Southwest. L. C. Hill. *Eng Rec* 70:609-10 D 5 '14

Stripping water-works reservoirs. A. Hawen and G. C. Whipple. *Eng N* 73:858-60 My 6 '15

Stripping water-works reservoirs. F. P. Stearns. *Eng N* 74:302-5 Ag 12 '15

See also Cisterns; Dams; Flood control; Irrigation; Water supply

**Reservoirs, Concrete**

- British practice in the design of reinforced concrete reservoirs. E. R. Matthews. Eng & Contr 42:519-20 D 2 '14
- Concrete-lined oil storage reservoirs in California; construction methods and cost data; abstract. E. D. Cole. diag Eng & Contr 44:408-9 N 24 '15
- Construction methods used in building Parkersburg reservoir. L. E. Chapin. diag Eng Rec 72:140-1 J 31 '15
- Construction of the Eden Park reservoir, Cincinnati. K. C. Crain. II Concrete Cem 6:134-5 Mr '15
- Design and construction of the North side reservoir of the Pittsburgh water works. II diag plan Concrete Cem 6:227-31 My '15
- Making concrete tight; Tacoma and Seattle water-works. C. E. Fowler. II Eng N 74:1076-7 D 2 '15
- Placing concrete in reservoir walls by compressed air, Montreal. II diag Eng N 73:122-3 Ja 21 '15
- Placing concrete in wall and dam of water supply reservoir at Montreal by compressed air method. II diag Eng & Contr 43:138 F 10 '15
- Placing monolithic lining on reservoir bank. II Eng N 74:1034 N 25 '15
- Two types of joint between walls and bottom of a reservoir. diag Eng N 73:591 Mr 25 '15

**Resins. See Gums and resins**

- Resistance to rolling of a hard body over a plastic surface, Theory of; abstract. B. B. Schultz. Am Soc M E J 37:478-9, 555-8 Ag-S '15

**Resolving**

- Resolving dredged areas in Victoria. Eng & Min J 98:1136-7 D 26 '14

**Resonance**

- Simple resonance experiment; abstract. O. Steels. diag Elec W 66:987-8 O 30 '15

**Respiration. See Breathing****Restaurants**

- Restaurant lighting. F. L. Godinez. II Arch & Bldg 47:336-8 S '15
- Typical restaurant plumbing system. G. D. Crain, jr. II plans Metal Work 32:727-9 D 4 '14

*See also* Tea rooms and tea houses

**Restaurants, Factory. See Factory restaurants****Restraint of trade**

- Chicago electrical contractors and fixture men indicted for conspiracy in restraint of trade. Elec R & W Elec'n 66:826-7 My 1 '15
- Federal court ruling in the Des Moines case. Dom Eng 71:161-2 My 8 '15

*See also* Monopolies; Trusts, Industrial

**Retaining walls**

- Construction of the Barge canal crossing of Oak Orchard creek. E. Low. II diag Eng N 73:430-2 Mr 4 '15
- Log retaining-wall. F. W. Foote. II Eng & Min J 100:394 S 4 '15
- Reinforced brickwork retaining wall. diag Engineer 120:10 J 1 2 '15
- Retaining walls on soft foundations. W. S. Lacher. II diag W Soc E J 20:232-47 Mr '15; Same cond. Eng & Contr 43:576-9 Je 30 '15; Abstract. Ry Age 58:411-13 Mr 5 '15; Discussion. W Soc E J 20:247-65 Mr '15
- Temporary timber walls for track elevation. II Eng Rec 71:646 My 22 '15

**Retaining walls, Concrete**

- Concerning the relative costs of plain and reinforced concrete retaining walls. J. I. Oberlander. Eng & Contr 43:457 My 19 '15
- Concrete-block and cellular retaining walls. W. S. Lacher. II diag Eng N 73:1048-9 My 27 '15
- Concrete retaining wall spans cut for subways undercrossing. II Eng Rec 72:642 N 20 '15
- Design methods in concrete construction—retaining walls. S. M. Cotten. diag Concrete Cem 7:68-7 Ag '15
- Designing of reinforced concrete retaining walls by comparison with the determined ratios of the various functions of the height and unit pressures. S. M. Cotten. Eng & Contr 42:146-8 Ag 12 '14

- Enlarging an old concrete retaining-wall along the White Plains road extension. G. Paaswell. II diag Eng N 74:508-9 S 9 '15

**Expansion joints in concrete structures. diag**

- Ry R 57:622-30 N 13 '15; Abstract. Eng Rec 72:532 O 30 '15

**From the soil up—a new method of designing. A. Reuterdahl. diag Eng & Contr 42:581-5 D 23 '14; Same cond. Eng M 48:740-2 F '15**

- High concrete retaining wall with structural reinforcing. II diag Eng N 73:776-7 Ap 22 '15

**High retaining walls of cantilever type for viaduct in St. Louis. S. W. Bowen. diag Eng Rec 72:109 J 1 24 '15****Light frames support reinforcement for high retaining wall. II diag Eng Rec 72:56 J 1 10 '15****London county hall. diag Engineer 120:147-8 Ag 13 '15****Nearness of railway tracks aids concreting of retaining walls. K. C. Cardwell. II Eng Rec 72:269-70 Ag 28 '15****New method used in constructing the retaining walls of the Lumber exchange building, Chicago. diag Eng & Contr 42:362-3 O 14 '14****New quaywall at Southampton, England. diag Eng N 73:1221 Je 24 '15****Patented cantilever vs. gravity retaining walls. diag Eng N 73:1088 Je 3 '15****Plant and working methods on approaches to North side Point bridge. E. L. Jones. II diag Eng N 72:1124-6 D 3 '14****Retaining wall to support Butler st., near Baker st., Pittsburgh. diag Concrete Cem 5:242-3 D '14****Stepped concrete river wall at Harrisburg, Penn. J. D. Justin. II diag Eng N 74:145-3 J 1 22 '15****Returnable packages**

- Accounting for cement packages. G. Wilson. J Account 19:198-205 Mr '15

**Revenue cutters**

- New United States revenue cutters. diag plans Int Marine Eng 20:4-7 Ja '15

**Reverberatory furnaces. See Furnaces, Metallurgical****Rewards, prizes, etc.**

- Prizes for scientists. Sci Am S 80:228 O 9 '15

**Rhells cathedral**

- Rhells cathedral. L. Brachet. II Am Inst Arch J 3:14-15 Ja '15

**Rheostats**

- High-voltage water rheostat. L. I. Clark. II diag Elec W 65:669-70 Mr 13 '15

**Large water rheostats. diag Elec W 65:41-2 Ja 2 '15****New types of Ward Leonard resistors. II Elec R & W Elec'n 65:1098-9 D 5 '14****Sliding-contact tube rheostats. II Elec W 66:560 S 18 '15****Water rheostats. N. L. Rea. diag Gen Elec R 18:1001-3 O '15*****See also* Electric controllers; Electric resistance****Richards, Joseph William, 1864—Sketch. por Eng M 50:204-5 N '15****Richmond, Va.****Architecture**

- Thomas Jefferson and the first monument of the classical revival in America. F. Kimball. II Am Inst Arch J 3:370-81 S '15

**Riddles**

- Portable riddle of novel design. II Iron Tr R 57:832 O 28 '15

**Rifle practice. See Target practice****Rifle ranges**

- Electric remote gages for shooting ranges. Sci Am 112:633-4 Je 26 '15

- Lighting of rifle ranges. II Elec R & W Elec'n 67:372 Ag 28 '15

- Lighting of rifle ranges. A. P. Trotter and others. II diag Illum Engr 8:261-81 Je '15

- Model target ranges in Belgium. Sci Am S 79:165 Mr 13 '15

**Rifles**

- Cincinnati rifle barrel grinding machine. diag Mach 22:260-1 N '15



**Rifles—Continued**

- European infantryman's rifle. E: C. Crossman. *Il Sci Am* 112:398-9 My 1 '15  
 Rifle and its bullet. H. L. Heussner. *Il diags Sci Am* 80:368-9 O 23 '15  
 Rifles and mortars. *Il diags Sci Am* 111:472-3 D 5 '14  
 Telescope sights for fighting rifles. E: C. Crossman. *Il Sci Am* 113:118-19 Ag 7 '15

**Rights of way**

- Location and width of highways and the securing of rights-of-way. A. D. Fletcher. *Eng & Contr* 42:523-4 D 3 '14; Same cond. *Eng Rec* 70:568 N 21 '14  
 United States mining statutes annotated; rights of way. J. W. Thompson. *U S Bur Mines Bul* 94:pt 2, 1188-93 '15

**Rignoux, Georges**

- Telephotographic apparatus of Georges Rignoux. R. Arapu. *diag Sci Am* 8 79:331 My 22 '15

**Riker, Andrew L., 1868-**

- Sketch. *por Eng M* 50:220-1 N '15

**Ripley, Edward Payson, 1845-**

- Celebration of seventieth birthday. *por Ry R* 57:778-86 N 6 '15  
 Dinner to E. P. Ripley on seventieth birthday. *por Ry Age* 59:849-53 N 5 '15

**Ripple marks. See Seashore****Ripraping**

- Earth embankment and fill at Shopton, Iowa. *il plan Eng N* 72:1172-3 D 10 '14

**Rittman, Walter F.**

- Government publicity methods. W. O. Snelling. *Met & Chem Eng* 13:273-3 My '15; *Excerpt. Eng & Min J* 59:787-8 My 1 '15

**Rittman process. See Gasoline****River traffic**

- Facilities for shipping and freight handling at river ports. M. E. R. Tratman. *Int Marine Eng* 20:115 Mr '15  
 River traffic in the United States. *Ry R* 56:164 Ja 30 '15

**Rivers**

- Rivers and railroads in the United States. W: W. Harts. *Ry Age* 58:230-1 F 5 '15  
 Snag boats on flood rivers. D. A. Willey. *Il Sci Am* 8 79:149 Mr 6 '15  
 Transportation of debris by running water. R. T. Hancock. *Eng & Min J* 59:459-60 Mr 6 '15

- Why rivers overflow: how floods may be prevented. A. B. Morgan. *Il diags Sci Am* 8 78:392-4 D 19 '14

- See also* Dams; Floods; Hydraulics; Mining debris; River traffic; Stream flow; Stream measurement; Valleys; Water pollution; Water power; Waterways

**Pollution****See Water pollution****Regulation**

- Combination concrete pavement and board mattress bank protection. *Il Eng & Contr* 44:271 O 6 '15

- Cost data on the work of improving the Neponset river in Massachusetts. E. M. Blake. *Il Eng & Contr* 43:34-6 Ja 13 '15

- How \$20,000,000 is to be spent; allotment of appropriation to government river and harbor projects. *Eng & Contr* 43:sup24 Ap 14 '15

- Illinois waterway—proposed eight foot channel from Lockport to Ulica. *map Eng & Contr* 43:201 Mr 3 '15

- Improvement of the river Trent. *map Engineer* 119:130-1 F 5 '15

- Lumber mattresses for bank protection. J. W. Skelly. *Eng Rec* 71:276 F 27 '15

- Lumber mattresses for bank protection in Louisiana. *Il Eng Rec* 70:686 D 26 '14

- Methods of creating and maintaining channels at mouths of fluvial and tidal rivers. E. L. Courthell. *Eng Rec* 71:42 Ja 9 '15

- Missouri river improvement work may be stopped. H. Deakynne. *Eng N* 74:409 Ag 26 '15

- Neponset river reclamation. W. B. Conant. *Il Munic J* 39:254-5 Ag 19 '15

- Paving river-beds with concrete. *Il Sci Am* 113:362-4 O 23 '15

- Plan for the improvement of Hell Gate, East river. C. D. Ward. *map Sci Am* 112:432 My 8 '15

- Plastic concrete mattress for river revetment. *Il diags Eng N* 74:202-3 Ag 5 '15

- Protecting valuable river lands in California. E. F. Comstock. *Il diag Eng N* 73:827 Ap 29 '15

- River-front improvement at Cape Girardeau, Mo. *Il Eng N* 73:874-5 My 6 '15

- River improvement for public health reclaims 10,000 acres of fertile land. R. W. Sherman. *Il map Eng Rec* 71:738-9 Je 12 '15

- Solving the silt problem: reservoirs suggested for muddy streams of the Southwest. L: C. Hill. *Eng Rec* 70:609-10 D 5 '14

- Stepped concrete river wall at Harrisburg, Penn. J. D. Justin. *Il diag Eng N* 74:145-8 J1 22 '15

- Wire and rock mattress to protect bridge pier. J. H. Fisk. *Eng N* 74:986 N 18 '15

- See also* Channels; Flood control; Mississippi river

- Rivers and harbors congress, National. *See* National rivers and harbors congress

**Riverside, New York****Bridges**

- New B. R. & P. structure across Allegheny river at Riverside. *Il diag Ry Age* 58:845-6 Ap 16 '15

**Riveting**

- Behavior of riveted joints under stresses: abstracts. J. E. Howard. *Int Marine Eng* 20:18-10 Ja '15; *Power* 41:216 F 9 '15

- Combination rivet set. L. L. Loucks. *diag Ry Age (Mech ed)* 89:251 My '15

- Diagram for net section of riveted tension members. T. A. Smith. *Eng N* 73:893 My 6 '15

- Eccentric rivet connections. C: D. Conklin, jr. *Eng Rec* 71:58 Ja 9 '15

- Eccentric rivet connections. J: C. Prior. *Eng Rec* 71:312 K 13 '15

- Hanna riveting machine. *Il Ry Age (Mech ed)* 89:547 O '15; *Eng Rec* 72:775 D 18 '15; *Mach* 22:347 D '15

- Machine which heats and drives rivets. *Il Iron Age* 95:937-8 Ap 20 '15

- Methods of jointing aluminum. *Il Mach* 21:471-2 F '15

- 100-ton pneumatic riveting hammer. *Il Iron Age* 96:795 Ap 8 '15

- Riveting in steel arch construction. H. A. Hatfield. *Il diags Ry Age (Mech ed)* 89:32-6, 87-90 Ja-F '15

- Safe eccentric loading of rivets. J. Di Stasio. *Sch Mines (J)* 35:213-22 Ap '14; *Excerpt. Eng & Contr* 42:512 D 2 '14

**Rivets**

- Authorities against rivet-tension. *Eng N* 74:183-5 J1 22 '15

- Rivets in tension. V. H. Pomeroy. *Eng N* 74:606 S 23 '15

- Tension rivets successful. *Eng N* 74:347 Ag 19 '15

- Tools for making a double-pronged rivet. *Il diags Mach* 21:200 D '14

**Rivett, Joseph P.**

- Rivett long machine. A. W. Birdsall. *Il por Inland Tr* 55:95-6 Ap '15

- Road administration. *See* Highway administration

- Road builders' association, American. *See* American road builders' association

- Road congress, Pan-American. *See* Pan-American road congress

**Road drags**

- Construction and use of the wooden road drag. *Il diags Eng & Contr* 43:213-15 Ag 26 '14

- Road foundations. *See* Pavements—Foundations; Roads—Foundations

**Road laws. See Highway law****Road making machinery**

- Austin ripper and Western grader. *Il Munic J* 39:375 S 2 '15

- Brick road on machine-leveled subgrade. *Eng Rec* 71:209 F 13 '15

- Development of the road paving plant. *Il Munic Eng* 47:478-81 D '14

**Road making machinery—Continued**

- Grading machine loads nine two-yard wagons in ten minutes. *Il Munic Eng* 49:124-5 S '15
- Guaranteed traction grader. *Il Eng & Contr* 44:97-8 Ag 4 '15
- Hetherington road building plant. *Il Munic J* 37:815 D 3 '14
- Hints on selecting machinery for road building. *Eng Rec* 71:151 Ja 30 '15
- Location and construction of highways in mountain country. F. W. Harris. *Il Eng N* 72:1200-1 D 17 '14; Same (Bagley scraper for road making). *Eng & Min J* 99:325 F 13 '15
- Machinery for construction and maintenance. T. R. Agg. Good Roads n s 9:21-4 Ja 2 '15; Same. *Eng & Contr* 43:156-8 F 17 '15
- Maney four-wheel scraper. *Il Munic Eng* 49:125-6 S '15
- Operation analysis of new machines which cheapen the moving of earth on road work. A. B. McDaniel. *Il Eng Rec* 72:126-8 J1 31 '15
- Portable drilling rig on road and street work—performance records in cutting trenches and cleaning reservoirs. *Il Munic Eng* 49:123-4 S '15
- Power road machinery with special reference to hauling and earth road grading. N. De Wind. *Il Eng & Contr* 43:83-6 Ja 27 '15
- Road and street exhibits at the Panama-Pacific International exposition. *Il Good Roads n* s 10:154-9 S 4 '15
- Road planer, grader and ditcher. *Il Good Roads n* s 9:30-1 F 6 '15
- Road scarifier. *Il Good Roads n* s 9:80 F 6 '15
- Scarifier attachment for Austin road graders. *Il Eng & Contr* 44:55 J1 21 '15
- Sixth Good roads show, Chicago, Dec. 14-18. *Il Good Roads n* s 9:30-7 Ja 3 '15
- See also* Paving machinery; Road drugs; Road rollers
- Road maps**
- Sixth volume added to Blue books. maps Automobile 32:596-9 Ap 1 '15
- Road materials**
- Asphaltic materials for road construction. A. A. Berkowitz. *Eng & Contr* 42:161-3 Ag 12 '14; Same. *Munic Eng* 47:461-7 D '14
- Bituminous road construction; committee report to Am. Soc. C. E. *Munic J* 38:286-8 Mr 4 '15; Same. *Eng & Contr* 43:278-80 Mr 24 '15
- Development of refined tars for use in road construction and maintenance. P. P. Sharples. *Met & Chem Eng* 13:918-30 D 1 '15
- Investigation of the concrete road-making properties of Minnesota stone and gravel. C. F. Shoop. *Il Minn U Bul* 2:1-55 '15
- Methods of sampling materials of construction used by the New York highway commission. *Eng & Contr* 42:158-60 Ag 12 '14
- Practical testing of asphalt and road oil. T. A. Fitch. *Eng & Contr* 44:367-9 N 10 '15
- Proposed standard definitions of road and pavement materials. *Munic Eng* 49:76 Ag '15
- Proposed standard terms for bituminous road materials. *Eng & Contr* 42:334-5 S 2 '14
- Proposed standard tests of bituminous road materials. *Eng N* 73:187 Ja 28 '15
- Sixth Good roads show, Chicago, Dec. 14-18. *Il Good Roads n* s 9:30-7 Ja 3 '15
- State-wide survey locates road-making materials in New York. *Eng Rec* 71:488-9 Ap 17 '15
- See also* Bituminous materials; Concrete; Gravel; Road oils
- Road ollers**
- Motor truck for oiling roadways. F. Reed. *Il Munic Eng* 47:442-4 D '14
- Road oiler developed to meet California conditions. *Il Eng Rec* 72:362 S 18 '15
- Road oils**
- Device tests adhesiveness of California road oils. *Il Eng Rec* 71:329 Mr 13 '15
- Practical testing of asphalt and road oil. T. A. Fitch. *Eng & Contr* 44:367-9 N 10 '15
- Progress reports of experiments in dust prevention and road preservation, 1914. U S Agric Bul 257:1-44 '15
- Road oil test for loss on heating needs revision. N. Chivvis. *diags Eng Rec* 72:570-6 N 6 '15

**Road rollers**

- Cheap and effective backfilling with a road roller. E. A. Heiny. *Il Eng N* 73:941 My 13 '15
- Electrically-driven road roller at St. Louis. *Il Elec Ry J* 44:1355 D 19 '14
- Twelve-ton oil-propelled road roller. *Il Engineer* 119:213 F 26 '15
- Road signs**
- Color schemes for highway signs as illustrated by practice in the Philippine Islands. J. L. Harrison. *Il diags Eng & Contr* 44:280-1 O 13 '15
- Concrete sign boards for highways. W. M. Kinney. *Concrete Cem* 7:32 J1 '15
- Concrete street signs and standards—letters in colored concrete. *Il diag Concrete Cem* 7:45 J1 '15
- County road signs placed in 1915. *Munic Eng* 48:270 Ap '15
- Road surveys. See Roads—Location**
- Road traffic**
- Segregation and analysis of local traffic: a neglected factor in traffic recording on country roads. *Eng & Contr* 42:283 S 23 '14
- Traffic; present tendencies, probable development and regulation. A. W. Dean. *Good Roads n* s 9:56-6 F 6 '15
- Value of a traffic census in determining the type of road to be constructed. W. W. Marr. *Eng & Contr* 44:369-70 N 10 '15
- Roadmasters' and maintenance of way association**
- 33d annual convention, Chicago, Sept. 7-10. *Ry Age* 59:517-25 S 17 '15
- 33d annual convention, Chicago, Sept. 7-10. *Ry R* 57:324-6 S 11 '15
- Roads**
- American road builders' association: abstracts of papers at the 11th annual convention held at Chicago, Dec. 14-18, 1914. *Eng Rec* 70:663-6 D 19 '14
- Benefits and burdens of better roads. S. E. Bradt. *Good Roads n* s 10:212-15 O 2 '15
- Boulder parapet for roadways in Fallsades interstate park. *Il Eng N* 74:162-3 J1 22 '15
- Comparative value of penetration roads. D. T. Pierce. *Il Good Roads n* s 10:260-3 N 6 '15
- Construction and maintenance of roads and bridges from July 1, 1913, to December 31, 1914. U S Agric Bul 284:1-64 '15
- Convention of American road builders' association, Chicago, Dec. 14-18. *Eng Rec* 70:sup 305-6 D 26 '14
- Design of cross-sections for steep grades on public highways. R. H. Piepmeyer. *Il Eng & Contr* 44:189-90 S 8 '15
- Determination of the justifiable outlay for specific cases of highway improvement. C. Richardson. *Good Roads n* s 10:196-7 O 2 '15
- Discussion of road construction at Am. Soc. of C. E. *Eng N* 73:186-7 Ja 28 '15
- Economic factors all-important in rural highways. L. W. Page. *Eng Rec* 72:385 S 25 '15
- Economic factors involved in road construction in strictly rural sections. G. Henry. *Eng & Contr* 42:256-8 S 9 '14
- Efficiency system for road contractors. J. H. Hammond. *Eng & Contr* 43:52-4 Je 23 '15
- Equipment for highway work. A. H. Blanchard. *Good Roads n* s 10:252-4 N 6 '15
- Features of road construction; road surfacing and corrugation. *Sci Am* S 80:283 O 30 '15
- 5th American good roads congress and 11th annual convention of the American road builders' association at Chicago, Dec. 14-18, 1914. *Good Roads n* s 9:3-29, 53-75, 96-106 Ja 2, F 6, Mr 6 '15
- Handling 400 tons of stone per day with auto trucks. *Eng Rec* 70:621-2 D 5 '14
- Heavy traffic roads. H. G. Shirley. *Eng Rec* 70:534-5 N 14 '14; Same. *Eng & Contr* 42:537-8 D 9 '14
- How small communities may have good roads. L. W. Page. *Il Sci Am* 112:14-15 Ja 3 '15
- Improvement of a section of lightly travelled country road using funds limited in amount. S. P. Hooker. *Eng & Contr* 43:86-7 Ja 27 '15
- Kinks in road construction. C. D. Franks. *Eng Rec* 71:197-8 F 13 '15

**Roads—Continued**

Location and construction of highways in mountain country. F. W. Harris. *Il* *diags* Eng N 72:1199-1201 D 17 '14; Excerpt (Don'ts in mountain road location). Eng & Min J 99:237-8 Ja 30 '15

Maximum use of industrial railway possible at low cost. F. Tarrant. Eng Rec 71:653-4 My 22 '15

Motor truck in road building. *Il* Munic Eng 48:205-8 Mr '15

Pan-American road congress proceedings at Oakland. Eng Rec 72:367-8, 397-8 S 18-25 '15  
Plea for greater mileage. S. P. Hooker. Eng Rec 70:702 D 26 '14

Portable railway in highway construction. *Il* Good Roads n s 9:180-1 My 1 '15

Road building with industrial equipment: twelve-car train hauled by a 20-horsepower dinky. *Il* Eng Rec 70:621 D 5 '14

Road congress at Atlanta. Good Roads n s 8:217-20 D 5 '14

Road exhibition and conference. Horticultural hall, London. Engineer 120:27-8 J1 9 '15

Split road on curve forces motorists to keep to right. *Il* Eng Rec 72:7 J1 3 '15

Theory of resistance to rolling of a hard body over a plastic surface; abstract. B. B. Schultz. Am Soc M E J 37:555-8 S '15

Traffic limits of various types of pavements. W. D. Washington. Eng & Contr 42:403-5 O 28 '14

Utilization of the motor truck in highway work. *Il* Good Roads n s 9:171-9 My 1 '15

Wearing surfaces. G: W. Tillson. Good Roads n s 9:141-3 Ap 3 '15

Width, alignment grade and drainage features of the designing of country roads. R. A. Meeker. plan Eng & Contr 42:346-7 O 7 '14

See also Causeways; Curbs; Dust prevention; Earthwork; Guard rails (for highways); Highway administration; Highway engineering; Pavements; Railroads; Railroad crossings; Road making machinery; Road maps; Road materials; Road traffic; Sidewalks; Speedways; Street cleaning; Street railroads; Streets; also Dixie highway; Lincoln highway

**Accounting**

See Highway accounting

**Contracts**

Going broke in road contracting. Eng & Contr 43:188 Mr 3 '15

Lump-sum contracts favored for Washington roads. Eng Rec 71:174 F 6 '15

Road contract of a hundred years ago. Eng & Contr 43:323-4 Ap 7 '15

**Convict labor**

Colorado makes 50 per cent saving with convict labor. J. E. Maloney. Eng Rec 72:444 O 9 '15

Convict classification for state road work. G. P. Coleman. Eng Rec 71:751-2 Je 13 '15

Convict labor for highway work. G. P. Coleman. Good Roads n s 10:208-10 O 2 '15

Convict labor in road construction in Colorado; with discussion. T. J. Ehrhart. Good Roads n s 9:101-3 Mr 6 '15; Excerpt. Eng N 73:375 F 25 '15

Convict labor on Alabama roads. Good Roads n s 10:82 Ag 7 '15

Convict labor on country roads. G: C. Warren. *Il* Munic Eng 48:28-35 Ja '15

Convict work in Arizona. F. G. Twitchell. Munic J 39:430-2 S 16 '15

Cumberland county, Maine, approves of convict labor on roads. Good Roads n s 10:69-70 J1 24 '15

Organization and equipment of convict camps in Georgia; methods and cost. J: C. Koeh. *Il* *diag* Eng & Contr 43:433-5, 500-2 My 13, Je 2 '15

Road building by convict labor. *Il* Good Roads n s 8:211-16 D 5 '14

Road building with convict labor in Fulton county, Georgia. W. T. Wilson. *Il* Eng & Contr 42:440-2 N 4 '14

Road construction in Reading township, Livingston county, with convict labor. B. H. Piepmeyer. *Il* Eng & Contr 44:39-41 J1 14 '15

Utilization of short-term convicts for highway work in Georgia. J. L. Stanford. Munic Eng 48:124-6 F '15; Same. Eng & Contr 43:290-1 Mr 31 '15  
Washington's state highways and highway department. W: R. Roy. *Il* Munic J 39:346-9 S 2 '15

**Cost**

Comparative costs of brick and concrete roads in Illinois. H. E. Bilger. Eng N 73:633 Ap 1 '15

Comparative costs of guard rail and wide fills on highways. *Il* *diags* Eng N 74:79-80 J1 8 '15

Convict work in Arizona. F. G. Twitchell. Munic J 39:430-2 S 16 '15

Cost of highways in three states. Munic J 38:425 Ap 1 '15

Cost of macadam object lesson roads in North Carolina. Eng & Contr 42:544-5 Je 16 '15

Costly road: Hudson county boulevard. Eng N 73:1049-50 My 27 '15

Costs of monolithic brick road construction. R. L. Bell. Eng & Contr 44:369 N 10 '15

Economical highway design. W. G. Harger. Eng N 73:1156-8 Je 17 '15

Expenditures for permanent and perishable features of roads. Eng Rec 70:635 D 12 '14

Highway bonds: a compilation of data and an analysis of economic features affecting construction and maintenance of highways financed by bond issues, and the theory of highway bond calculations. L. I. Hewes and J. W. Glover. U S Agric Bul 136:24-7 '15

Methods and cost of road grading in West Virginia. A. D. Williams. Eng & Contr 43:16-17 Ja 6 '15; Excerpt (Cost of grading and excavating). Concrete Cem 5:267-8 D '14

Methods and costs of constructing three sections of sand-clay road. J. H. Pratt. Eng & Contr 43:375-6 Ap 28 '15

Methods and costs of moving earth in southern road construction. N. C. Hughes, jr. Eng N 73:734-5 Ap 15 '15

Methods and costs of road work in district number two of Lowndes county, Mississippi. *Il* Good Roads n s 9:91-3 Mr 6 '15

Minnesota road work statistics for 1914. Eng & Contr 44:4-5 J1 7 '15

Operation analysis of new machines which cheapen the moving of earth on road work. A. B. McDaniel. *Il* Eng Rec 73:126-8 J1 31 '15

Organization and standards of the Wisconsin highway commission. *Il* *diags* Eng & Contr 42:393-403 O 28 '14

Percentage of road money for roadbed. Horseless Age 34:397-8 D 23 '14

Price and cost of a road. H. E. Bilger. *Il* Munic Eng 48:280-3 My '15

Price in Illinois of three popular types of road. Eng & Contr 43:345 Ap 14 '15

Progress of state management of public roads. J. E. Pennybacker. Eng & Contr 44:133 Ag 18 '15

Relative 20-year economy of various types of roads and pavements. R. Trauttschold. Eng & Contr 44:89-91 Ag 4 '15

Resurfacing water bound macadam. S. C. Corson. Munic J 38:422-3 Ap 1 '15

Road maintenance: cost in France, England and Massachusetts. W: D. Sohler. Munic J 37:956-7 D 31 '14

See also Haulage—Cost; Roads, Concrete—Cost

**Cost of maintenance**

See Roads—Maintenance and repair

**Crowns**

Sloping versus curved crowns for highways. W. S. Farley. Eng Rec 72:174 Ag 7 '15

Superelevation of curves on highways, Illinois practice. H. E. Bilger. Eng N 74:74-5 J1 8 '15

**Drainage**

Drains for county roads, 1915. Munic Eng 48:265 Ap '15

Road drainage and foundations. G: W. Cooley. Good Roads n s 10:202 O 2 '15

Subdrainage of earth roads. *Il* Eng N 73:328-9 Ap 29 '15

## Roads—Continued

## Finance

- Apportionment of cost of highway bridges between street railways and cities, with discussion. C. M. Spofford. *Il diags W Soc E J* 20:406-43 My '15
- Benefits and burdens of better roads. S. E. Bratt. *Good Roads n s* 10:214-15 O 2 '15
- County bond issues for road work during the present year. *Good Roads n s* 10:280 N 20 '15
- Financing and building a county highway. *Il Munic Eng* 48:328-32 Je '15
- Financing county roadbuilding in Illinois. map *Eng N* 74:1079 D 2 '15
- Financing of permanent road construction. W. A. McLean. *Eng & Contr* 43:231-2 Mr 10 '15
- Gains made by state management of road construction and maintenance. J. E. Pennybacker. *Eng Rec* 72:189-90 Ag 14 '15
- Good roads—bond issues—automobiles. A. A. Young. *Eng M* 49:600-1 Jl '15
- Highway bonds: a compilation of data and an analysis of economic features affecting construction and maintenance of highways financed by bond issues, and the theory of highway bond calculations. L. I. Hewes and J. W. Glover. *Il maps U S Agric Bul* 136:1-129 '15
- Highway indebtedness; its limitation and regulation. N. P. Lewis. *Good Roads n s* 10:194-6 O 2 '15
- Life of highway improvement should limit term of bonds. N. P. Lewis. *Eng Rec* 72:352 S 18 '15
- Methods of retiring rural highway bonds. *Horseless Age* 34:358-9 D 9 '14
- Motor truck and the road; who should pay the road tax? J. S. Harwhite. *Il Sci Am* 113:66-1 Jl 17 '15
- Relation of farm produce hauling to permanent road improvements. W. A. McLean. *Eng & Contr* 42:215-17 Ag 26 '14
- Road bonds should provide for maintenance. J. F. Witt. *Eng Rec* 72:352-3 S 18 '15
- Road improvement. W. A. McLean. *Good Roads n s* 9:4-7 Ja 2 '15
- State aid road work in New Jersey. *Il Good Roads n s* 9:252-3 Je 19 '15

See also Roads—Cost

## Foundations

- Costs of monolithic brick road construction. R. L. Bell. *Eng & Contr* 44:369 N 10 '15
- Drainage and foundations on the Maine Post road. W. J. Dougherty. *Il Eng N* 74:458 S 2 '15
- Prevention of foundation movement in roads. *diags Eng & Contr* 42:396 O 21 '14
- Road drainage and foundations. G. W. Cooley. *Good Roads n s* 10:302 O 2 '15
- Road foundations—concrete, telford, gravel, etc.; with discussion. J. A. Johnston. *Good Roads n s* 9:14-21 Ja 2 '15

## Grades

- Alignment and grades on country roads requiring a pavement not readily replaceable. *Eng & Contr* 43:21 Ja 18 '15
- Conditions determining maximum grades and methods and cost of road grading in West Virginia. A. D. Williams. *Eng & Contr* 43:16-17 Ja 6 '15
- Design of cross-sections for steep grades on public highways. B. H. Piepmeyer. *Il Eng & Contr* 44:189-90 S 8 '15
- Importance of grades increases with betterment of road. E. B. McCormick. *Eng Rec* 71:265-6 F 27 '15
- Road grading in counties, 1915; tabulation. *Munic Eng* 48:258-60 Ap '15

## Inspection

- Inspection of state aid road construction in Wisconsin. J. T. Donaghey. *Eng & Contr* 42:462 N 11 '14

## Law

See Highway Law

## Location

- Lack of progress in methods of earth road location. W. C. Fawcett. *Good Roads n s* 9:234 Je 5 '15

- Preliminary surveys for Michigan highways cost \$2.72 per mile. *Eng Rec* 72:113 Jl 24 '15
- Proper road location; its importance and effects. W. R. Roy. *Good Roads n s* 10:200-2 O 2 '15

- Road location and the economics of road improvement. D. T. Brown. *Eng & Contr* 43:15-16 Ja 6 '15

- Road reconnaissance and the application of sound engineering principles to road location in California. *Eng & Contr* 43:258 Mr 17 '15

- Surveys and construction plans for trunk line road construction in Michigan. *Il diags Eng & Contr* 43:162-7 F 24 '15

## Maintenance and repair

- How Minnesota maintains her earth roads. *diag Eng Rec* 71:745 Je 13 '15
- Maintaining bituminous surfaces. W. H. Connell. *Munic J* 38:436-7 Ap 1 '15
- Maintaining concrete and brick roads in Illinois. B. H. Piepmeyer. *Il Eng N* 74:310-13 Ag 13 '15
- Maintenance. W. W. Crosby. *Good Roads n s* 9:188-9 My 1 '15
- Maintenance and repair of Pennsylvania state roads. *Eng & Contr* 42:590-3 D 23 '14
- Maintenance cost system used on U. S. experimental road. E. W. James and C. S. Reeve. *Il Eng Rec* 71:418-21 Ap 3 '15
- Maintenance; materials and methods. A. W. Dean. *Good Roads n s* 10:206-8 O 2 '15
- Maintenance neglected in bond-built roads. *Horseless Age* 35:181 F 3 '15
- Maintenance of macadam and gravel roads. *Eng N* 73:637-8 Ap 1 '15
- Patrol system of road maintenance and repair in Pennsylvania. *Eng & Contr* 44:70-1 Jl 28 '15; Same cond. *Eng Rec* 72:100 Jl 24 '15
- Relative 20-year economy of various types of roads and pavements. R. Trauttschold. *Eng & Contr* 44:89-91 Ag 4 '15
- Repair and maintenance costs of park roads in Boston, Mass., in 1913. *Eng & Contr* 42:234 S 2 '14
- Road-maintenance costkeeping in Pennsylvania. *Eng N* 74:250-3 Ag 5 '15
- Road maintenance costs in Monroe county; New York state highways. *Eng & Contr* 43:511-12 Je 9 '15
- Road maintenance in San Joaquin county, California. W. B. Hogan. *Il map Eng & Contr* 42:122-9 Ag 5 '14
- Traffic and the methods and cost of road maintenance in Massachusetts and a comparison with English and French conditions. W. D. Sohler. *Eng & Contr* 42:607-12 D 30 '14; Same cond. *Eng N* 72:1036-8 N 19 '14; Same cond. *Munic J* 37:956-7 D 21 '14
- Tropical road maintenance complicated by floods. *Eng Rec* 72:224 Ag 21 '15

See also Roads—Surface treatment

## Specifications

- New and different specification for concrete roads. W. W. Crosby. *Eng & Contr* 44:384-5 N 17 '15
- Organization and standards of the Pennsylvania state highway department. *Il diags Eng & Contr* 42:180-93 Ag 19 '14
- Organization for and methods and cost of state aid road construction in Alabama. *Il diags Eng & Contr* 42:506-8 N 25 '14
- Report of the American road builders' association committee on standards. *Good Roads n s* 9:223 O Je 5 '15
- Road specifications with special reference to rolling. W. W. Crosby. *Eng & Contr* 42:594-6 D 23 '14
- Specifications and standards of the Maine highway commission. *diags Eng & Contr* 42:276-81 S 16 '14
- Specifications covering the rolling of road crusts of various types. W. W. Crosby. *Good Roads n s* 10:172-3 S 18 '15
- Surveys and construction plans for trunk line road construction in Michigan. *Il diags Eng & Contr* 43:164-6 F 24 '15
- Uniform plans and specifications. A. D. Williams. *Good Roads n s* 10:263 N 6 '15

## State aid

See Roads—Finance; Roads, State aid

## Roads—Continued

## Surface treatment

- Comparative value of penetration roads. D. T. Pierce. *Il Good Roads* n s 10:280-3 N 6 '15
- Construction of bituminous surfaces on country roads. Munic Eng 49:71-2 Ag '15
- Cost of bituminous surfacing for roads analyzed. *Il Eng Rec* 72:336 S 11 '15
- Maintaining bituminous surfaces. W: H. Connell. Munic J 38:436-7 Ap 1 '15
- Methods and cost of constructing a bituminous carpet on concrete roads. F. W. Whitlow. Eng & Contr 42:569-70 D 18 '14
- Progress and reports of experiments in dust prevention and road preservation, 1914. U S Agric Bul 257:1-44 '15
- Resurfacing an old concrete road. *Il Munic J* 37:355-6 D 31 '14
- Resurfacing old roads. W: D. Uhler. Good Roads n s 10:210-12 O 2 '15; Same cond. Eng Rec 72:391-2 S 25 '15
- Road and boulevard construction in Philadelphia, with tables of costs. *Il map Munic Eng* 48:243-5 Ap '15
- Specifications for the application of resurfacing asphalt binder. Eng N 73:770 Ap 22 '15
- Surfacing the Boston Post road. *Il Munic J* 39:547-8 O 7 '15
- Unit costs of bituminous carpet treatment and bituminous macadam by the penetration method on two roads in Illinois. Eng & Contr 42:524 D 2 '14
- Unit costs of resurfacing portions of the Niagara river road in Queen Victoria Park, Canada. J: H. Jackson. *Il Eng & Contr* 42:536 D 9 '14

See also Roads, Oiled; Roads, Tarred

## Terminology

- Bituminous nomenclature. Eng & Contr 42:491-2 N 25 '14
- Bituminous road construction; committee report to Am. Soc. C. E. Munic J 38:236-8 Mr 4 '15; Same. Eng & Contr 43:278-80 Mr 24 '15
- Proposed standard definitions of road and pavement materials. Munic Eng 49:76 Ag '15
- Proposed standard terms for bituminous road materials. Eng & Contr 42:234-5 S 3 '14
- What is asphaltic concrete? Munic J 38:697-8 My 20 '15

## Width

- Road and pavement dimensions—widths, depths and crown; with discussion. L. White. Good Roads n s 9:8-14 Ja 2 '15

## Alabama

- Highway improvement in the far South. C: E. Foote. *Il Horseless Age* 35:481-2 Ap 7 '15
- Organization for and methods and cost of state aid road construction in Alabama. *Il diags Eng & Contr* 42:504-8 N 25 '14

## Alaska

- Alaska's road and bridge builders face snow, frozen ground and glacial floods. G. E. Edgerton. *Il map Eng Rec* 71:764-6 Je 19 '15; Abstract. Eng M 49:736-7 Ag '15
- Methods and cost of road and trail construction in Alaska. F. A. Pope. map Eng & Contr 42:231-4, 302-4 S 2, 23 '14

## California

- Building a 3000-mile highway system for \$18,000,000. Eng Rec 71:233-4 F 20 '15
- California highway commission's work. A. B. Fletcher. *Il Munic J* 39:352-4 S 2 '15
- California state highways. A. B. Fletcher. *Il Good Roads* n s 10:119-26 S 4 '15
- Concrete base construction on California state highways. J. B. Woodson. Eng & Contr 42:235 S 2 '14
- Example of costly highway construction. *Il Eng Rec* 72:102 J 24 '15
- New California road overcomes mountain barrier. N. D. Darlington. *Il Eng Rec* 72:322-3 S 11 '15

## Colorado

- New automobile highway ascends Pikes Peak. *Il map Eng Rec* 71:769-70 Je 19 '15
- Phases of road improvement work in Colorado. J. E. Maloney. Good Roads n s 10:97-8 Ag 7 '15

- Road construction in Denver's mountain parks. O. B. Thum. *Il plan Munic J* 38:417-20 Ap 1 '15

## Florida

- Highway conditions in Florida. C: E. Foote. Good Roads n s 9:139-40 Ap 3 '15
- Impressions of Florida roads. *Il Good Roads* n s 9:144-5 Ap 3 '15
- Misuse of a good paving material is detrimental to Florida road development. C: E. Foote. *Il Eng Rec* 71:452-3 Ap 10 '15
- Road improvement in the far South. C: E. Foote. *Il Horseless Age* 35:351-2 Mr 10 '15
- Sand-asphalt may solve Florida road problem. C: E. Foote. *Il Eng Rec* 71:622-3 My 15 '15
- Sheet asphalt for Florida roads. G: L. Watson. *Il Munic J* 39:503-6 S 30 '15

## Georgia

- Road building with convict labor in Fulton county, Georgia. W. T. Wilson. *Il Eng & Contr* 42:440-2 N 4 '14

## Great Britain

- Life of English roads as determined from traffic statistics. W. de H. Washington. Eng & Contr 42:594 D 23 '14

## Hawaii

- Features of highway work in Hawaii. *Il Good Roads* n s 9:182-4 My 1 '15

## Idaho

- Proposed Idaho state highways. *Il Eng N* 73:936 My 13 '15
- Survey of the Idaho state highway system. *Il Good Roads* n s 9:219-21 Je 5 '15

## Illinois

- Concrete and brick as paving materials on Illinois highways. H. E. Bilger. Eng & Contr 43:254-5 Mr 17 '15
- Organization of road work under the Illinois highway commission. *Il map Eng & Contr* 43:468-72 My 26 '15
- Revised cross-sections for Illinois roads. H. E. Bilger. *Il Eng N* 74:534-7 S 23 '15
- Selecting rural-road types for the state of Illinois. W: W. Marr. Eng N 74:834 O 28 '15

## India

- British India. U S Sp Cons Rep 73:182-6 '15

## Iowa

- Experiment with gravel roads in Iowa. T. R. Agg. *Il Eng Rec* 72:661-6 N 27 '15

## Massachusetts

- Bituminous penetration roads in Massachusetts equal those built by the mixing method. *Il Eng Rec* 71:608-10 My 15 '15
- Traffic and the methods and cost of road maintenance in Massachusetts and a comparison with English and French conditions. W. D. Solier. Eng & Contr 42:607-12 D 30 '14; Same cond. Eng N 72:1036-8 N 19 '14; Same cond. Munic J 37:956-7 D 31 '14

## Michigan

- Surveys and construction plans for trunk line road construction in Michigan. *Il diags Eng & Contr* 43:162-7 F 24 '15

## Minnesota

- Minnesota road work statistics for 1914. Eng & Contr 44:4-5 J 7 '15

## Mississippi

- Methods and cost of gravel road construction in a road improvement district in Lowndes county. *Il Eng & Contr* 42:301-2 S 23 '14
- Methods and cost of road work in district number two of Lowndes county, Mississippi. *Il Good Roads* n s 9:91-3 Mr 6 '15

## New Jersey

- Costly road. Eng N 73:1049-50 My 27 '15
- Making a road up the Palisades. *Il plan Eng N* 74:998-1000 N 18 '15
- Roadway up the Palisades. *Il Munic J* 37:949-53 D 31 '14

## New Mexico

- Road construction in solid rock side hill, New Mexico. diag Eng & Contr 43:504 Je 2 '15

## Roads—Continued

## New York

Alpine roadbuilding in the Hudson river valley. *Il Eng N 74:1025-6 N 25 '15*  
 Construction and maintenance of New York state highways. A. H. Blanchard. *Sch Mines Q 38:147-53 Ja '15*  
 Engineering investigation of New York highway work. *Eng N 73:787-8 Ap 22 '15*  
 New York highway work. *Munic J 38:423-5 Ap 1 '15*  
 Storm King highway, New York. H. E. Breed. *Il map Eng N 74:721-4 O 14 '15*  
 Storm King road a shelf blasted in mountain-side 400 feet above the Hudson. *Il diags Eng Rec 71:193-3 F 13 '15*

## Ohio

Brick roads and streets. J. Laylin. *Munic Eng 48:10-15 Ja '15*; Same, with discussion. *Good Roads n s 9:58-60 F 6 '15*  
 Highway construction in Ohio; details of work contemplated in 37 counties. *Eng & Contr 43:sup22-3 Ap 14 '15*

## Oregon

Columbia highway in Oregon. H. L. Bowlby. *Il Eng N 73:62-4 Ja 14 '15*  
 Dry masonry walls for highway embankments. *Il Eng Rec 70:687 D 26 '14*  
 Oregon's state highways. H. M. White. *Il Munic J 39:349-52 S 2 '15*  
 Road improvement in Multnomah county, Oregon. *Il Good Roads n s 10:141-4 S 4 '15*

## Pennsylvania

Equipment and methods used on a state aid road contract in Pennsylvania. *Il Good Roads n s 10:79-80 Ag 7 '15*  
 Pennsylvania builds concrete road as object lesson. *Il Eng Rec 72:530-1 O 30 '15*

## Philippine Islands

Philippine road built at high level to escape flood damage. *Il map Eng Rec 72:204-6 Ag 28 '15*  
 Road system of Batangas province, Philippine Islands. *Il Good Roads n s 9:106-7 Mr 6 '15*

## Texas

Highway system of Tarrant county, Texas. *Il Good Roads n s 9:136-7 Ap 3 '15*  
 Macadam road construction in Texas. J. F. Witt. *Il Eng & Contr 42:335 S 30 '14*

## United States

County roads to be constructed, 1915; tabulation. *Munic Eng 48:257-61 Ap '15*  
 Data concerning highway construction. *Munic J 38:432-3 Ap 1 '15*  
 Mileage of good roads in the United States. *Munic J 38:435-6 Ap 1 '15*  
 Notes from state highway departments. *Munic J 38:429-31 Ap 1 '15*  
 \$108,191,774 for roads in 1914. J. E. Schipper. *map Automobile 33:139-42 Jl 23 '15*  
 Review of road work done in the several states in 1914 and that proposed for the current year. *Good Roads n s 10:15-16 Jl 3 '15*  
 Review of road work in the United States during the present year and forecast of work in 1915. *Good Roads n s 8:227-33 D 5 '14*  
 Roadway surfaces of state aid roads. F. F. Rogers. *Eng & Contr 44:281-3 O 13 '15*; Same. *Good Roads n s 10:203 O 2 '15*

## Virginia

Methods and cost of constructing a mountain road system in Wise county, Virginia. W. F. Cocke. *Il map Eng & Contr 43:341-4 Ap 14 '15*  
 Sand-clay road construction in Virginia. F. D. Henly. *Il Eng & Contr 42:593-4 D 23 '14*

## Washington

Brick highways in King county, Washington. F. W. Allen. *Il diags Munic J 37:795-9 D 3 '14*  
 Washington's state highways and highway department. W. R. Roy. *Il Munic J 39:348-9 S 2 '15*

## Wisconsin

Organization and standards of the Wisconsin highway commission. *Il diags Eng & Contr 42:318-403 O 28 '14*

## Roads, Bituminous

Bitulithic pavement and Warrenite roadway. G. H. Perkins. *Il Boston Soc C E J 1:119-31 Mr '14*  
 Bituminous macadam roads in Rhode Island. L. W. Patterson. *Munic Eng 47:437-41 D '14*; Abstract. *Eng Rec 71:77-8 Ja 18 '15*  
 Bituminous penetration roads in Massachusetts equal those built by the mixing method. *Il Eng Rec 71:608-10 My 15 '15*  
 Bituminous road construction; committee report to Am. Soc. C. E. *Munic J 38:285-8 Mr 4 '15*; Excerpt (Definitions of terms). *Eng & Contr 43:278-80 Mr 24 '15*  
 Kentucky rock asphalt road. G. D. Crain, jr. *Munic J 39:355-6 S 2 '15*  
 Sand-asphalt may solve Florida road problem. C. E. Foote. *Il Eng Rec 71:622-3 My 15 '15*  
 Sheet asphalt for Florida roads. G. L. Watson. *Il Munic J 39:503-8 S 30 '15*  
 Types of bituminous construction. F. P. Smith. *Munic Eng 49:168-70 N '15*; Same. *Munic J 39:652-5 O 28 '15*; Summary. *Good Roads n s 10:285 N 27 '15*  
*See also Pavements, Bituminous*

## Roads, Brick

Brick and concrete country roads. *Munic J 39:361-2 S 2 '15*  
 Brick highways in King county, Washington. F. W. Allen. *Il diags Munic J 37:795-9 D 3 '14*  
 Brick monolithic construction of county highways. R. L. Bell. *Il Eng & Contr 44:268-70 O 6 '15*; Same cond. (Illinois finds new mortar bed an improvement) *Eng Rec 72:453-4 O 9 '15*  
 Brick pavement on old gravel road foundation for portion of the Lincoln highway. F. A. Churchill. *Eng & Contr 43:546 Je 18 '15*  
 Brick road built monolithic at Paris, Ill. W. T. Blackburn. *Il Eng Rec 72:54-5 Jl 10 '15*  
 Brick road construction in Florida. W. P. Blair. *Eng Rec 71:691-2 My 29 '15*  
 Brick road construction upon a sand base in Hillsborough county, Florida. *Il Eng & Contr 44:333-6 O 27 '15*  
 Brick road on machine-leveled subgrade. *Eng Rec 71:209 F 13 '15*  
 Brick roads and streets. J. Laylin. *Munic Eng 48:10-15 Ja '15*; Same, with discussion. *Good Roads n s 9:56-60 F 6 '15*  
 Concrete and brick as paving materials on Illinois highways. H. E. Bilger. *Eng & Contr 43:254-5 Mr 17 '15*  
 Features of brick road construction in Illinois. R. L. Bell. *Il Eng & Contr 43:159-60 F 17 '15*  
 Misuse of a good paving material is detrimental to Florida road development. C. E. Foote. *Il Eng Rec 71:452-3 Ap 10 '15*  
 New type of brick road construction. *Il Munic Eng 49:57-8 Ag '15*  
 Ohio uses cement-sand support for brick pavement. D. Moomaw. *Eng Rec 72:455 O 9 '15*  
 Program of permanency on the Pacific highway. A. P. Denton. *Il Munic Eng 49:30-2 Jl '15*  
 Proposed construction to reduce the cost of brick roads. J. S. Tucker. *Eng & Contr 43:374-5 Ap 28 '15*; Discussion. H. E. Bilger; J. I. Tucker. *43:406-7 My 5 '15*  
 Reducing the cost of brick roads in Illinois. H. E. Bilger. *Eng N 73:696-7 Ap 8 '15*  
 Revised cross-sections for Illinois roads. H. E. Bilger. *Il Eng N 74:584-7 S 23 '15*  
 Rigid bed eliminates noise and subsurface pockets. F. A. Churchill. *Eng Rec 72:455-6 O 9 '15*  
*See also Pavements, Brick*

## Roads, Concrete

Aggregate mechanically handled from pit to road. *Il Eng Rec 72:133-4 Jl 21 '15*  
 Brick and concrete country roads. *Munic J 39:361-2 S 2 '15*  
 California concrete road; construction methods. J. B. Woodson. *Munic J 38:421-2 Ap 1 '15*

**Roads, Concrete—Continued**

- California highway commission's work. A. B. Fletcher. *Il Munic Eng* 39:352-4 S 2 '15
- California state highways. A. B. Fletcher. *Il Good Roads* n s 10:119-26 S 4 '15
- Combination concrete road and flood channel. Los Angeles county, Calif. R. Bennett. *Il diags Eng N* 73:42-3 Ja 7 '15
- Concrete and brick as paving materials on Illinois highways. H. E. Bilger. *Eng & Contr* 43:254-5 Mr 17 '15
- Concrete base construction on California state highways. J. B. Woodson. *Eng & Contr* 42:235 S 2 '14
- Concrete material tables have saved money on road work. *Eng Rec* 72:307 Ag 14 '15
- Concrete materials tested in a Jones-Talbot rattle. *Eng Rec* 71:390 Mr 27 '15
- Concrete road at Winnetka, Ill. S. E. Bates. *Il Munic J* 39:429-30 S 16 '15
- Concrete road building in cold weather requires precautions. *Eng Rec* 72:641-2 N 20 '15
- Concrete-road building with small concrete mixers. *Il Eng N* 72:1163 D 10 '14
- Concrete road with a single crack in 4 1/4 miles the result of careful construction on Connecticut turnpike. *Il Eng Rec* 71:480-2 Ap 17 '15
- Concrete roads and frost action. A. M. Lovis. *Eng & Contr* 43:367 Ap 21 '15
- Concrete roads and frost action. S. T. Morse. *Eng & Contr* 43:436 My 12 '15
- Concrete roads; with discussion. H. J. Kuelling. *Good Roads* n s 9:68-70 F 6 '15; Same cond. *Eng Rec* 70:665 D 19 '14; Same cond. *Concrete Cem* 6:96 F '15; Abstract. *Munic J* 38:438-4 Ap 1 '15
- Construction and maintenance details of concrete road work in Wayne county, Michigan, in 1914. *Il Eng & Contr* 42:457-60 N 11 '14
- Construction methods and costs and service records for concrete roads in Ohio. *Eng & Contr* 42:160-3 Ag 12 '14
- Construction of concrete roads in Milwaukee county, Wisconsin, in 1914. H. J. Kuelling. *Il map Concrete Cem* 6:70-4 F '15
- Difficult construction of concrete road; the Cedar Point automobile road. *Il Munic Eng* 48:810-12 My '15
- Economical handling of a large concrete road contract. *Il Concrete Cem* 7:97-8 S '15
- Estimating the cost of concrete roads in Milwaukee county, Wisconsin, and methods and cost of maintenance. H. J. Kuelling. *Eng & Contr* 43:207-8 Mr 3 '15
- Excavating aggregates with drag line and hauling by motor truck on Indiana concrete road work. S. E. Bates. *Il plans Eng & Contr* 44:331-3 S 22 '15
- Financing and building a county highway. *Il Munic Eng* 48:328-32 Je '15
- Gasoline locomotive hauls material trains for concrete highway. *Il Eng Rec* 71:152 Ja 30 '15
- How do you man your paving mixer? *diags Eng Rec* 72:240 Ag 21 '15
- Hydrated lime in road concrete. *Eng N* 73:503 Mr 11 '15
- Improvement of Sheridan road in Highland Park, Ill. S. E. Bates. *Il Munic Eng* 48:359-60 Je '15
- Investigation of the concrete road-making properties of Minnesota stone and gravel. C. F. Shoop. *Il Minn U Bul* 2:1-55 '15
- Investigation to determine the relative resistance to wear of concrete made of different aggregates. C. F. Shoop. *Il Eng & Contr* 44:144-7 Ag 25 '15
- Kinks in concrete road and pavement construction. C. D. Franks. *Il diags Eng & Contr* 43:114-18 F 10 '15; Excerpt (Supply and use of water in concrete road building). *Munic Eng* 48:121-4 F '15
- Materials for concrete road delivered in industrial cars from central plant. *Il Eng Rec* 71:295-6 Mr 6 '15
- Method of carrying concrete road over trenches with soft backfill. *Concrete Cem* 7:69 Ag '15
- Method of constructing concrete road in freezing weather. H. C. Campbell. *Il Eng & Contr* 44:348 N 3 '15
- Methods and cost of concrete road construction by day labor under the supervision of the Illinois highway commission. *Eng & Contr* 43:118-20 F 10 '15
- Methods and cost of constructing a bituminous carpet on concrete roads. F. W. Whitlow. *Eng & Contr* 42:569-70 D 16 '14
- Methods and cost of constructing a concrete road in LaSalle co., Illinois. B. H. Piepmeyer. *Il Eng & Contr* 43:109-10 F 3 '15
- Methods and cost of constructing a rolled concrete road in Washington. H. L. Bowiby. *Il Eng & Contr* 43:203-8 Mr 3 '15
- Methods and cost of constructing nine miles of concrete state road in California. J. B. Woodson. *Eng & Contr* 43:107-9 F 3 '15
- Methods, organization and equipment for concrete road construction. C. H. Moorefield and J. T. Voshell. *diags Eng & Contr* 44:168-70 S 1 '15
- New and different specification for concrete roads. W. W. Crosby. *Eng & Contr* 44:384-5 N 17 '15
- Notes on concrete road construction. *Eng N* 73:77 Ja 14 '15
- Novel concrete road plan for curve on grade. *Il Munic Eng* 49:69 Ag '15
- Old National road and its reconstruction. C. H. Moorefield. *Il Eng & Contr* 43:227-9 Mr 10 '15
- Papers, reports and discussions on concrete roads presented at 11th annual convention of American concrete institute. *Concrete Cem* 6:118-15 Mr '15
- Pennsylvania builds concrete road as object lesson. *Il Eng Rec* 72:530-1 O 30 '15
- Recent improvements in the methods of handling materials in concrete road construction. *Eng & Contr* 43:113-14 F 10 '15
- Reinforcing and sub-grade drainage to eliminate cracking in concrete roads. J. W. Mueller; A. M. Lovis. *Concrete Cem* 7:111-13 S '15
- Resurfacing an old concrete road. *Il Munic J* 37:955-6 D 31 '14
- Revised cross-sections for Illinois roads. H. E. Bilger. *Il Eng N* 74:584-7 S 23 '15
- Road engineer experiments with hydrated lime. *Eng Rec* 71:798-9 Je 26 '15
- Rolling wet concrete for roads. *Il Eng N* 73:829 Ap 29 '15
- Steel side and curb forms. *Il Munic Eng* 49:83 Ag '15
- Study of a water supply by pumping for concrete road construction. *plan Eng & Contr* 43:467-8 My 26 '15
- Testing aggregates for concrete roads built by the New York highway commission. H. S. Mattimore. *Eng & Contr* 43:294-6 Mr 31 '15; Same cond. *Munic Eng* 48:131-3 F '15; Excerpt (Sand for concrete pavements). *Munic J* 38:430-1 Ap 1 '15
- Use of hydrated lime in concrete roads. L. N. Whitcraft. *Good Roads* n s 10:160-1 S 4 '15
- Wayne co. (Mich.) roads. F. F. Rogers. *Concrete Cem* 6:96-7 F '15

**See also Pavements, Concrete****Cost**

- Daily cost-data sheets on concrete road construction. *Eng Rec* 71:676 My 29 '15
- Detailed cost of a recently completed concrete road near Aurora, Illinois. *Eng & Contr* 42:304 S 23 '14
- Estimating the cost of concrete roads in Milwaukee county, Wisconsin, and methods and cost of maintenance; abstracts. H. J. Kuelling. *Eng & Contr* 43:207-8 Mr 3 '15; *Concrete Cem* 6:114-15 Mr '15
- Hauling gravel with motor truck and trailers; a service test in concrete road construction. *Il Eng & Contr* 42:535-6 D 9 '14
- Method of estimating the cost of a concrete road. H. J. Kuelling. *Eng & Contr* 43:446-7 My 19 '15
- Methods and cost of constructing a concrete road in LaSalle co., Illinois. B. H. Piepmeyer. *Il Eng & Contr* 43:109-10 F 3 '15
- Methods and cost of constructing nine miles of concrete state road in California. J. B. Woodson. *Eng & Contr* 43:107-9 F 3 '15
- 1915 practice of prominent builders of concrete roads. *Concrete Cem* 7:39-41 J1 '15
- Washed aggregate and machine-finished surface, features of Michigan concrete road. *Il Eng Rec* 72:168-9 Ag 7 '15

**Roads, Earth**

- Earth and gravel road construction and maintenance. L. O. Baker. *Good Roads* n s 9:70-3 F 6 '15  
 Rebuilding rural roads in the southern states. G. B. Buchanan. *Eng N* 74:446-8 S 3 '15  
 Subdrainage of earth roads. *Eng N* 73:828-9 Ap 29 '15  
 Unsatisfactory experience with sand-clay roads. S. H. Lea. *Eng N* 73:873 My 6 '15

**Roads, Experimental**

- Maintenance cost system used on U. S. experimental road. E. W. James and C. S. Reeve. *Eng Rec* 71:418-21 Ap 3 '15  
 Philadelphia's test road. *Munic J* 38:772-4 Je 3 '15  
 Road and boulevard construction in Philadelphia. *Eng* 48:243-5 Ap '35

**Roads, Gravel**

- Building gravel roads in Logan county, Illinois. J. I. Miller. *Eng N* 72:1265-6 D 24 '14  
 Construction of gravel roads in Iowa. T. R. Agg. *Eng & Contr* 42:217-18 Ag 26 '14  
 Demonstration of gravel road construction using motor truck and road grader. R. L. Morrison. *Eng & Contr* 44:205 S 15 '15  
 Experiment with gravel roads in Iowa. T. R. Agg. *Eng Rec* 72:664-6 N 27 '15  
 Methods and cost of gravel road construction in a road improvement district in Lowndes county, Mississippi. *Eng & Contr* 42:301-2 S 23 '14  
 Methods and cost of road work in district number two of Lowndes county, Mississippi. *Eng & Contr* 42:301-2 S 23 '14  
 Methods of constructing and maintaining gravel roads in Ohio. A. H. Hinkle. *Eng & Contr* 43:376-7 Ap 28 '15

**Roads, Macadamized**

- Cost of macadam object lesson roads in North Carolina. *Eng & Contr* 43:544-5 Je 16 '15  
 Method of reconstruction of old macadam roads. D. T. Brown. *Eng & Contr* 44:202-3 S 15 '15  
 Methods and costs of building a macadam road using an industrial railway. R. F. Mason. *Eng & Contr* 43:322-3 Ap 7 '15  
 Resurfacing old macadam roads with Warrentite. *Eng & Contr* 43:322-3 Ap 7 '15  
 Resurfacing water bound macadam. S. C. Corson. *Munic J* 38:422-3 Ap 1 '15  
 Strengthening the macadam road to meet modern traffic. *Munic Eng* 48:318-4 My '15  
 Traffic limits of various types of pavements. W. D. Washington. *Eng & Contr* 42:403-4 O 28 '14

**Roads, Mountain. See Mountain roads****Roads, Oiled**

- Diagram for computing quantity of road oil required. *Eng & Contr* 44:71 J 28 '15  
 How oiled earth roads are built in Kansas. W. S. Gearhart. *Eng Rec* 72:193 Ag 14 '15  
 Iowa experiments with oil on dirt roads. *Eng Rec* 72:15-16 J 1 '15  
 Method of applying oil for dust prevention. *Eng & Contr* 43:435-6 My 12 '15  
*See also* Road oilers; Road oils; Street oiling

**Roads, State**

- Gains made by state management of road construction and maintenance. J. E. Pennybacker. *Eng Rec* 72:189-90 Ag 14 '15  
*See also* Roads, subheads California, Idaho, and names of other states

**Roads, State aid**

- Miles of state aid roads; table. *Eng & Contr* 44:282 O 13 '15; Same. *Good Roads* n s 10:203 O 2 '15  
 Organization for and methods and cost of state aid road construction in Alabama. *Eng & Contr* 42:506-8 N 25 '14

**Roads, Tarred**

- Design and construction of bituminous surfaced roads in England. W. H. Maxwell. *Eng & Contr* 42:255-60 S 9 '14  
 Effect of tarred roads upon trees. *Sci Am* 112:344 Ap 10 '15  
 Methods of applying tars for dust prevention. *Eng & Contr* 43:445-6 My 19 '15  
 Resurfacing water bound macadam. S. C. Corson. *Munic J* 38:422-3 Ap 1 '15

- Simply constructed tar-macadam road. *Eng N* 74:81-2 J 1 '15.

**Roasters. See Furnaces, Metallurgical**

- Robbia, Luca della, 1399-1432  
 Luca della Robbia, by A. Marquand. *Review. Arch Rec* 37:378-80 Ap '15

**Robins, Thomas, 1868-**

- Sketch. *por Eng M* 50:219 N '15

**Rochester, New York****Rapid transit**

- Decision in Rochester fare case. *Elec Ry J* 45:439-40 F 27 '15  
 Rochester train operation; operation of motor and trailer combinations has relieved traffic congestion in downtown section. *diags Elec Ry J* 45:752-3 Ap 17 '15  
 Telephone dispatching in city service. E. E. Strong. *Eng Ry J* 45:385-7 My 8 '15

**Rock drills**

- Air and electric rock drills. *Elec R & W Elec'n* 67:480 S 11 '15  
 Churn-drilling costs, Sacramento hill, Arizona. A. Notman. *Am Inst Min E Bul* 104:1877-90 Ag '15  
 Comparative methods and costs of preparing rock for steam shovels. C. C. Phelps. *Eng & Contr* 43:321 Ap 7 '15  
 Fort Wayne electric rock drill. C. Jackson. *Eng & Contr* 43:321 Ap 7 '15  
 Handling drill steel at the Quincy mine. L. H. Goodwin. *plan Eng & Min J* 99:16 Ja 2 '15  
 How the repair man sees it. H. E. Scott. *Eng & Min J* 100:800-1 N 13 '15  
 How to choose rock drills. J. R. McFarland. *Eng & Min J* 100:719-23 O 30 '15  
 Jack-hammer successfully run with steam on sewer trench job. C. J. Phelps. *Eng Rec* 71:278 F 27 '15  
 Method of rock drilling for dredge excavation in land drainage. C. N. Olson. *diag Eng & Contr* 44:151 Ag 25 '15  
 Modern rotary drill. H. R. Hughes. *Am Inst Min E Bul* 99:629-35 Mr '15; Same cond. *Eng N* 73:928-9 My 13 '15; *Abstract Ind Eng* 15:59-60 F '15; *Abstract. Colliery* 35:523 My '15; *Discussion. Am Inst Min E Bul* 101:1162 My '15

- New bit for rotary drilling. *Eng & Contr* 43:525 Je 9 '15

- Pneumatic drill-column. S. V. Bergh. *diag Eng & Min J* 99:14 Ja 2 '15

- Quarrying with air hammer drills on scaffolds. C. C. Phelps. *diags Eng & Min J* 99:903 My 22 '15

- Record of Temple-Ingersoll drills on the Messabi range. *Eng & Min J* 98:1042-3 D 12 '14

- Rock-drill nicknames. J. R. McFarland. *Eng & Min J* 99:860-1 My 15 '15

- Rock drills in mining. L. O. Kellogg. *Eng & Min J* 49:535-52 J 1 '15

- Subaqueous rock excavation. C. C. Phelps. *Eng N* 74:1020-1, 1062-7 N 25-D 2 '15

- Testing and application of hammer drills. B. F. Tilson. *diags Am Inst Min E Bul* 98:505-28 F '15; *Excerpt (How the drill bit breaks the rock). Eng & Min J* 99:573-4 Mr 27 '15; *Discussion. Am Inst Min E Bul* 101:1197-1201 My '15

- Union portable gasoline churn drill. *Eng & Min J* 99:491-2 Mr 13 '15

- Western Electric hammer drill. *diag Eng & Min J* 100:638 O 16 '15

- See also* Drilling and boring (earth and rocks); Mining machinery

**Failures**

- Failure and heat treatment of drill steel. S. V. Bergh. *Eng & Min J* 99:612-14 Ap 3 '15

- Failure of hollow drill-steel. T. E. Sturtevant. *Eng & Min J* 99:579 Mr 27 '15

**Manufacture**

- Motor drive in a rock-drill factory. F. D. Burr. *Eng & Min J* 65:1700-1 Je 28 '15

**Sharpening**

- See Sharpening*



Rock drills—*Continued*

## Testing

Tests of rock drills at North Star mine, California. R. H. Bedford and W. Hague. *Il Am Inst Min E Bul* 92:1807-16 Ag '14; Same cond. Eng & Min J 98:255-7 Ag '14; Same cond. Eng Rec 70:374 O 3 '14; Same cond. Eng & Contr 42:463-5 N 11 '14; Excerpt. Eng & Min J 98:439 S 5 '14; Discussion. *Am Inst Min E Bul* 95:2750-1 N '14

## Rock dust

Methods of preventing and limiting explosions in coal mines. G. S. Rice and L. M. Jones. *diags pls U S Bur Mines Tech Pa* 84:1-42 '15

Pulmonary disease among miners in the Joplin district, Missouri, and its relation to rock dust in the mines. A. J. Lanza and E. Higgins. *Il U S Bur Mines Tech Pa* 105:22-47 '15; Abstract. Eng & Min J 99:331-3 F 13 '15

Respirators vs. water sprays. Eng & Min J 100:855-7 N 20 '15

Rock-dust sampler. O. Ruhl. *Il Eng & Min J* 99:238 Ja 30 '15

Rock Island & Pacific railroad. See Chicago, Rock Island & Pacific railroad

Rock-sounding rig. *Il diags Eng N* 73:633-4 Ap 8 '15

Rocket camera. See Photography, Military

## Rockhouses

Shaft-rockhouse practice in the copper country. L. H. Goodwin. *Il diags Eng & Min J* 99:1061-6, 1107-10; 100:7-12, 53-7 Je 19-Jl 10 '15

## Rocks

Sulphide-bearing rocks from Litchfield, Conn. E. Howe. *diags Econ Geol* 10:330-47 Je '15

See also Geology; Granite; Graywacke; Limestone; Mineralogy; Shale

## Rocks, Igneous

Alumite and pyrophyllite in triassic volcanics at Kyquoot Sound, British Columbia. C. H. Clapp. *Econ Geol* 10:70-88 Ja '15

Oil in an igneous rock. J. A. Udden. *Econ Geol* 10:582-5 S '15

## Rocky mountain national park

Women's work in conservation. Mrs. J. D. Sherman. *Am For* 21:541-2 My '15

## Rocky mountains

Origin of the Rocky mountains. S. J. Schofield. *Il Sci Am S* 79:88-9 F 6 '15

Parks in the Canadian Cordillera. J. A. Allan. *Il Sci Am S* 80:360-2 D 4 '15

## Rods

Continuous casting machine. R. C. Patterson. *diag Metal Ind n s* 13:254-5 Je '15

Continuous rod casting machine. *Il Sci Am* 113:185+ Ag 21 '15

Continuous rod-casting process; construction and operation of a casting machine designed to simplify the manufacture of rods and wire. E. K. Hammond. *Il diag Mach* 21:765-7 My '15

Mellen rod-casting machine. R. C. Patterson, Jr. *Il Am Inst Min E Bul* 101:919-25 My '15; Same. *Iron Age* 95:996-8 My 6 '15; Same. *Iron Tr R* 57:446-7+ S 2 '15; Abstract. *Am Soc M E J* 37:346-7 Je '15; Abstract. *Eng M* 49:593-4 Jl '15

Torsional strengths of guy anchor rods. T. Croft. *diags Elec W* 55:1607-9 Je 19 '15

Roentgen rays. See X rays

Roentgenology. See X rays

## Roller bearings

American lineshaft hanger bearing. *Il Mach* 21:1024 Ag '15

Application of roller bearings to mine-car haulage. P. N. Case. *diags Eng & Min J* 100:144-6 Jl 24 '15

Double-head, automatic for finishing roller bearing rollers. *Il diag Mach* 21:965 Ag '15

Making roller bearings. *Il Iron Age* 95:127 Jl 15 '15

Press tools for making a roller bearing cage. *Il diags Mach* 21:547-9 Mr '15

Roller-bearing trolley wheels. *Il Elec Ry J* 45:996-7 My 22 '15

Roller journal bearing. *diags Ry Age (Mech ed)* 89:141-2 Mr '15

## Roller skating

## Regulation

Regulation of roller skating on streets and sidewalks. A. L. Bostwick. *Munic J* 38:658 My 13 '15

## Rolling

Theory of resistance to rolling of a hard body over a plastic surface; abstract. R. B. Schultz. *Am Soc M E J* 37:478-9, 555-8 Ag-S '15

## Rolling mills

Buying power for the rolling mill. B. Wiley and W. Sykes. *Iron Tr R* 57:530-3 S 16 '15

Cambria steel company's new bar mill. *Il diags Iron Age* 95:1002-4 My 6 '15

Cold rolling mills made in America. *Il Iron Tr R* 56:520+ Mr 11 '15

Development of the merchant rolling mill. J. R. George. *Il diags Iron Tr R* 56:1125-8+ Je 3 '15; Same. *Iron Age* 95:1282-6 Je 10 '15

Device for changing rolling-mill rolls. *diag Iron Age* 95:133 Ja 14 '15; *Iron Tr R* 56:178 Ja 21 '15

Displaced volume and power in rolling mills; identity of results obtained from two commonly used equations. F. Denk. *Iron Age* 96:283-90 Ag 5 '15

Efficiency of blooming mills. C. L. Kuderer. *Iron Tr R* 57:489 S 9 '15

Electric driven mill at Warren, Ohio. *diags Iron Tr R* 56:868-70 Ap 29 '15

Electrical practice in steel mills. D. M. Petty. *Iron Tr R* 57:941-2 N 11 '15

Features of central station power. E. Chearown. *Iron Tr R* 57:533-4 S 23 '15

Great Northern reclamation plant. *Il Ry Age (Mech ed)* 89:805-8 Je '15; Same. *Ry Age* 58:967-70 My 7 '15

Heavy electric reversing mills. W. Sykes. *Il Iron Tr R* 55:1181-3+ D 24 '14

How special shapes are rolled. E. C. Kreutzberg. *Il Iron Tr R* 56:123-6 Ja 14 '15

Hydraulic rolling mill operating valve. *diag Iron Age* 96:811 O 7 '15

Installing rolling-mill anchor bolts. A. Connely. *diags Iron Age* 96:236-7 Ag 5 '15

Large steel-mill motor drive. *Il Elec W* 56:1089-90 N 13 '15

Low-pressure turbine at the Carpenter steel mill. *Il plan Power* 42:74-5 Jl 20 '15

Mill for cold rolling steel; plant of the Schwartz-Herrmann steel works for rolling band steel. *Il Iron Age* 95:899 Ap 22 '15

Modern plant for rolling iron: St. Louis screw co. H. C. Hestep. *Il diags plans Iron Tr R* 57:82-9+ Jl 8 '15

New rolling mill near Salt Lake City to utilize iron and steel scrap. *Il plan Iron Age* 96:192-3 Jl 22 '15

Pennsylvania's rail and structural mill at Steelton. *Il plan Iron Age* 96:617-22 S 16 '15

Pointers on rail mill practice. E. Standiford. *Iron Tr R* 57:307-9+ Ag 12 '15

Puppe universal mill. *diags Iron Age* 96:922-3 O 21 '15

Rapid reconstruction of old mill; remodeled plant of Mansfield sheet & tin plate co. R. V. Sawhill. *Il Iron Tr R* 56:817-19 Ap 22 '15

Rolling mill with steam turbine drive: plant of the Carpenter steel company. *Il plan Iron Age* 94:1221-4 N 26 '14; Same. *Iron Tr R* 55:997-1000 N 26 '14; Same. *Power* 41:456-8 Mr 30 '15; Same cond. *Eng M* 48:591-3 Ja '15

Rolling mill work. *Iron Age* 95:102 Ja 7 '15

Rolling mills for cold metal. *Iron Age* 95:1115 My 20 '15

Rolling strip steel in New Jersey; new plant of Schwartz-Herrmann steel works. C. J. Stark. *Il Iron Tr R* 56:779-80 Ap 15 '15

Steam turbine mill drive; with discussion. J. D. Berg. *Il diags Eng Soc W Pa* 30:778-803 N '14; Abstract. *Am Soc M E J* 37:238-9 Ap '15

Steel mill castings: use of manganese steel in heavy rolling mill equipment. G. Tripp. *Il Iron Tr R* 56:49-53 Ja 7 '15

Steel mill controllers from the operator's standpoint. J. N. Riggs. *Am Inst E E Pro* 34:715-22 My '15; Discussion. 34:2869-94 N '15

Temperatures in rolling steel rails. *Iron Age* 96:19-22 Jl 1 '15

**Rolling mills—Continued**

- Test of large reversing engine and rolling mill. K. Nibecker. *Il diag Eng Soc W Pa* 30:529-65 JI '14; Abstract. *Am Soc M E J* 37:56-6 Ja '15; Discussion. *Eng Soc W Pa* 30:565-840, 804-8 JI N '14
- Unusual roughing mill; a German three-high two-pass unit. B. Quast. *Il diag Iron Age* 96: 931 O 21 '15
- Variable-speed drives for rolling mills. K. A. Pauly. *Power* 42:527-8 O 12 '15; Abstract (Two control systems for steel-mill motor drives). *diag Elec W* 66:865-6 O 16 '15
- See also* Rolls (machinery); Steel works

**Records**

- Electrical repair record system; methods of National tube co. J. F. Kelly. *Iron Tr R* 56:1064-7 My 27 '15; Same cond. *Iron Age* 95:1070 My 13 '15; Discussion. *Iron Tr R* 56: 1067-9 My 27 '15
- Keep record of electrical repairs. G. E. Stoltz. *Iron Tr R* 56:987-9+ My 13 '15; Same cond. (Steel mill electric motors). *Iron Age* 95: 952-3 Ap 29 '15

**Rolls (machinery)**

- Mixture for chilled crusher rolls. W. J. Keep. *Foundry* 43:187 My '15
- Roll design for several sections. C. Holzweiler. *Iron Age* 94:1467-9 D 24 '14
- Successful roll operation. J. Humes. *Eng & Min J* 99:615-16 Ap 3 '15

**Roman architecture. See Architecture, Roman****Rome, Ancient****Industry**

- Roman technics and industry in early Germany. *Sci Am S* 79:130 F 27 '15

**Rome (city)**

- American academy in Rome. C. G. La Farge. *Il Am Inst Arch J* 3:52-72 F '15

**Architecture**

- Villa Madama; text and measured drawings by Howard W. Germann. *Il Arch Rec* 36:500-10, 37:36-47 D '14-Ja '15

**Roof flanges**

- Developing pattern for roof flange and hood. *diags Metal Work* 84:283 Ag 27 '15
- Developing roof flange and plate pattern. *diags Metal Work* 84:335 S 10 '15

**Roofing**

- Accounting system for roofing business. E. B. Bourcier. *Metal Work* 83:39-42 Ja 1 '15
- Corrugated asbestos cement sheets for roofing and siding. *diags Eng & Contr* 44:214 S 15 '15; *Iron Age* 96:407 Ag 19 '15; *Ry Age* 59: 587 S 17 '15; *Ind Eng* 15:103-4 S '15; *Am Gas Light J* 103:220-1 O 4 '15
- Roofing materials in Kongo. *Metal Work* 83: 858 Mr 5 '15
- Sheet metal product selling campaigns. R. Danzer. *Metal Work* 83:42+ Ja 1 '15
- Shingle roofs and fire limits. W. B. Conant. *Munic J* 38:189-90 F 11 '15
- Terne plate and sheet metal for roofing. J. Troland; C. D. Puckett. *Metal Work* 83: 902-4 Je 18 '15
- Use of slate as a roofing material. J. C. Taylor. *Bldg Age* 37:46 Mr '15

**Roofs**

- Constructing galvanized iron silo roof. *diags Metal Work* 83:534-6 Ap 9 '15
- Detailed information on roof framing. *Bldg Age* 37:55-6 My '15
- Details of an unusual truss roof. J. Y. Dunlop. *diags Bldg Age* 37:62 JI '15
- Eccentric heel joint of roof truss; solution of problem. E. H. Rockwell. *Eng N* 74:796-8 O 21 '15
- Framing a Mansard roof with dormers. O. B. Magnin. *diags Bldg Age* 37:64-5 Ja '15
- Graphic method of detailing hip-rafter connections. C. L. C. Magee. *Eng Rec* 71:562-3 My 1 '15
- How a large truss roof was raised. J. F. Hobart. *Il Bldg Age* 37:26-30 My '15
- Laying galvanized corrugated roofing sheets. E. Stern. *diags Metal Work* 83:844-5 Je 11 '15
- Laying slates in putty. *Il Bldg Age* 37:34 S '15

- Metal flashings for slate or shingle roofs. *diags Metal Work* 84:299 S 3 '15
- Metal roof coverings in Galveston hurricane. C. D. Puckett. *Il Metal Work* 84:336 S 10 '15

- Method of laying standing seam roofing. *Metal Work* 83:497+ Ap 2 '15
- Moments at eccentric heel-joint of roof truss. C. W. Chassaing. *Eng N* 73:990 My 20 '15
- Reinforcement for the roof timbers of Westminster hall, England. F. Baines. *Eng & Contr* 42:172-5 Ag 19 '14
- Roof framing chart. J. J. Umbs. *Bldg Age* 37: 51-6 JI '15
- Roof framing with the steel square. *Il Bldg Age* 37:46-8 N '15
- Roof framing with the steel square. D. P. Barry. *Bldg Age* 37:45-6 O '15
- Roof replacement in Superior, Wis. *diag Elec W* 65:792-3 Mr 27 '15
- Safe construction of church roof trusses. K. D. Schwendener. *Bldg Age* 37:52-3 Mr '15
- Three roofs furnish more dirt than 4 1/4 miles of street. *Il Eng Rec* 71:683 My 29 '15
- See also* Building; Car roofs; Ceilings; Domes; Girders; Gutters (roof); Roofing; Scaffolding; Steel construction; Strains and stresses; Trusses

**Roofs, Concrete**

- Concrete roof for a root cellar. McCullough. *diags plan Bldg Age* 37:54-6 JI '15
- Experiences with concrete in the republic of Panama. A. P. Cray. *Il diag Eng N* 73: 214-16 F 4 '15
- Long-span roof slab of concrete and tile; concrete top surface, large hollow tile, and two-way reinforcement. M. Miller. *Il Eng Rec* 71:516-17 Ap 24 '15
- Methods and costs of providing slopes for drainage on flat concrete roofs. A. M. Wolf. *diags Concrete Cem* 6:86-8 F '15

**Rope**

- Care and use of hoisting accessories: wire rope, manila rope, hooks, chains, accessories, lubrication of wire rope, strength of slings. *Mach* 21:297-8 D '14
- Electricity in twine and rope mills. *Il Elec R & W Elec'n* 67:551-4 S 25 '15
- Experiments to determine stresses in parts of rope falls. C. S. Adams. *Eng Rec* 72:425-6 O 2 '15
- Lateral friction of winding ropes; abstract. H. W. G. Halbaum. *Am Soc M E J* 37:351-2 Je '15
- Use and care of manila rope. F. E. Weise. *Eng & Contr* 44:345-6 N 3 '15
- See also* Knots and splices; Manila rope; Rope driving

**Testing**

- New rope-testing machine. *Il diag Eng N* 74: 173-3 JI 22 '15

**Rope driving**

- Transmitting power by rope drives. H. D. Jackson. *Il diag Power* 40:808-11 D 8 '14

*See also* Belting**Ropeways. See Cableways****Rotary converters**

- Converter station of Aluminum company of America, Maryville, Tenn. *Il Power* 41:776-7 Je 8 '15
- Feeder-tap resistance in rotary-converter practice. L. P. Creelhus; E. C. Baugher. *Elec Ry J* 45:799-800 Ap 24 '15
- 45,000-kw. synchronous converter substation of the Aluminum company of America at Massena, Springs, N. Y. J. L. Burnham and R. C. Muir. *Il diag Gen Elec R* 18:873-8 S '15
- Motor-generators versus rotary converters. E. Friedlaender. *Power* 42:453 S 28 '15
- Parallel operation of frequency changers. G. H. Rettew. *diag Gen Elec R* 18:836-8 Ag '15
- Polarity reversal in synchronous converters. E. R. Shepard. *diags Elec W* 65:210-11 Ja 28 '15
- Practical notes on rotary converters. *Elec R & W Elec'n* 66:989 My 29 '15
- Protecting synchronous converters. plan *Power* 42:171-2 Ag 3 '15

**Rotary converters—Continued**

Recent improvements in single-phase rotary converters. V. A. Fynn. *Il Elec W* 66:1046-6 N 6 '15

Same starting equipment for large and small machines. *Il plan Elec W* 65:420-1 F 13 '15

Sixty-cycle rotary converters. *Engineer* 118:538-9 D 4 '14

Sixty-cycle rotary converters in series in 1500-volt service. *diags Elec Ry J* 45:633-4 Mr 27 '15

Synchronous booster—converter for Dayton power and light company. *Il Elec R & W Elec'n* 66:1218 Je 26 '15

Unusual experience with rotary converter. F. W. Swift. *diag Power* 41:97 Ja 19 '15

Rotation of the earth. See Earth—Rotation

**Roundhouses**

Best practices in engine house work. D: E. Barton. *Ry Age* (Mech ed) 89:133 Mr '15

Big Bill Agnew and blue Monday. H. D. Wolcomb. *Ry Age* (Mech ed) 89:583-6 O '15

Efficiency in a modern engine house. J: C. Murdock. *Ry Age* (Mech ed) 88:842-3 D '14

Engine failures, their causes and cure. J. E. Anderson. *Ry Age* (Mech ed) 89:587-8 N '15

Engine house organization. W. P. Huntley. *Ry Age* (Mech ed) 89:135-6 Mr '15

Engine houses, principles of design; committee report of A. R. E. A. Eng & Contr 43:300 Mr 31 '15

Features of engine house design. B. Bird. *diags Ry R* 57:142-3 Ji 31 '15

Handling work reports at engine houses. J. E. Tefft. *Ry Age* (Mech ed) 89:31-2 Ja '15

Modern concrete and brick roundhouse at Du Bois, Pa. *Il diag Ry Age* 53:1110-11 My 28 '15

Reinforced concrete and brick roundhouse of the Buffalo, Rochester & Pittsburgh Ry., at Dubois, Pa. *diags plans Eng & Contr* 44:66-9 Ji 28 '15

Reinforced-concrete roundhouse at Dubois. *Il diags Eng Rec* 71:167-9 F 6 '15

Roundhouse efficiency. *Ry Age* (Mech ed) 89:423-5 Ag '15; Same cond. *Ry Age* 59:156-7 Ji 23 '15; Abstract. *Ry R* 57:119 Ji 24 '15

Smoke exhauster for the St. Paul engine house at Chicago. W. S. Lacher. *Il diags Ry Age* 58:98-9 Ja 15 '15

Suggestions for a properly kept roundhouse. W. U. Appleton. *Ry Age* (Mech ed) 89:187-8 Ap '15

Training engine house foremen. R. G. Gilbride. *Ry Age* (Mech ed) 89:31 F '15

**Routing systems**

Eisemann's train-dispatcher system. J. E. Schipper. *Il plans Automobile* 32:580-5 Ap 1 '15

New Taylor-Wharton plant with diagram of layout. *Il Iron Tr R* 57:794-7+ O 21 '15

Routing—schedule and despatch. G: D. Babcock. *Il Ind Eng* 14:427-31 N '14

Shop system of the American machine & foundry co. E: K. Hammond. *diags Mach* 21:446-50 F '15

**Rubber**

Details of rubber embargo lifting. Horseless *Age* 35:222-3 F 17 '15

Electricity in rubber mills. *Il Elec R & W Elec'n* 66:573-9 Mr 27 '15

Electricity in the rubber industry. E. W. Pilgrim. *Am Inst El E* *Pro* 34:3028-33 D '15

Factors involved in motor application, with particular reference to the rubber industry. A. F. Lewis. *Am Inst El E* *Pro* 34:2666-74 N '15

Hysteresis tests for rubber. E. L. Davies. *J Ind & Eng Chem* 6:935-6 D '14

Instruments to test rubber. *Il Automobile* 33:65 Ji 8 '15

Measuring the hardness and elasticity of rubber. *Il Sci Am* 113:236 S 11 '15

Measuring the hardness of rubber. *Il Iron Age* 85:1393 Je 24 '15

Pontianak (Jellutong) rubber resin. C. Ellis and A. A. Wells. *J Ind & Eng Chem* 7:747-50 S '15

Recent methods for the determination of total sulphur in rubber. J. B. Tuttle and A. Isaacs. *U S Bur Stand Tech Pa* 45:1-16 '15; Same. *J Ind & Eng Chem* 7:658-63 Ag '15

Reclaimed rubber. *Engineer* 120:423-9 N 5 '15

Specification of vulcanized rubber gum by volume and its determination by a new solution method. F. Gottsch. *Il J Ind & Eng Chem* 7:582-6 Ji '15

Testing of rubber goods. *Il diags U S Bur Stand Circ* 33:1-89 '15

Vulcanization experiments on plantation para rubber, the cause of variability; abstract. B. J. Eaton and J. Grantham. *Am Soc M E J* 87:725-6 D '15

Rubber, Artificial

Artificial production of caoutchouc. F. W. Hinrichsen. *Sci Am S* 79:399-400 Je 19 '15

Potatoes and salt. R. Chauvenet. *Met & Chem Eng* 12:741-2 D '14

Present status of synthetic production. F. W. Hinrichsen. *Horseless Age* 36:145+ Ag 1 '15

Rubber, Substitutes for

Rubber substitute; coal tar chief ingredient of product. *Automobile* 32:1143 Je 24 '15

Rubidium

Potential of the rubidium electrode. G. N. Lewis and W: L. Argo. *diag Am Chem Soc J* 37:1933-30 S '15

Runes

How we got our alphabet; earlier English and Irish alphabets. W. Rice. *Inland Ftr* 55:33-4 Ap '15

Rural architecture. See Bungalows; Country houses; Farm buildings

Rural electric service. See Electric service, Rural

Rural schools

Rural school and the hookworm disease. *Il Sci Am S* 79:164-5 Mr 13 '15

Ruskin, John, 1819-1900

Architectural draughtsmen. H: Winslow. *Il Am Inst Arch J* 3:406-20 O '15

Russia

See also Railroads—Russia

**Army**

Bath trains of the Russian army. *Il Sci Am* 113:13 Ji 3 '15; Same. *Metal Work* 84:363-4 S 17 '15

**Commerce**

American opportunity for Russian business. D: L. Hough. *map Iron Age* 95:616-17 Mr 18 '15

Engineering openings in Russia. *Sci Am* 112:Ap 3 '15

Russia and her trade. *Engineer* 119:173-4 F 19 '15

Russia and its trade possibilities. A. Znamiecki. *Am Ind* 15:19-22, 28-9 Ja-F '15

Russia from the point of view of an American engineer and business man. D: L. Hough. *Iron Age* 95:664-8 Mr 25 '15

**Industries and resources**

Electrical development in Russia. L. W. Schmidt. *Elec W* 65:1719-20 Je 26 '15

Refrigeration and cognate enterprises in Russia. M. T. Zarotchenzeff. *Am Ind* 16:17-19+ N '15

Russia—its future as a coal and iron producer. C: R. King. *map Eng M* 48:481-92 Ja '15

Russia's power resources; extensive water falls and peat deposits await exploitation. *maps Eng M* 49:909-12 S '15

See also Mines and mineral resources—Russia

**Public works**

Two large irrigation projects in Russia. M. Nikolitch. *Il map Eng N* 74:8-11, 102-4 Ji 1, 15 '15; Abstract. *Eng M* 50:467-9 D '15

Rust. See Corrosion and anti-corrosives

Ryerson, Joseph T., & son

Retelling steel mill products. *Il plan Iron Tr R* 56:65-71 Ja 7 '15

**S**

Safes

New burglar-proof safe. *Sci Am* 112:593 Je 12 '15

See also Vaults

**Safety at sea**

- Application of subdivision rules adopted at International conference: abstract. J. Donald. *Int Marine Eng* 20:9 Ja '15  
 Emergency exit from boiler rooms. *Il Sci Am* 113:201+ S 4 '15  
 Emergency marine gangway. *Il Sci Am* 112:410 My '15  
 Fire-room emergency escape. *diags Int Marine Eng* 20:410-12 S '15  
 International conference on safety of life at sea: abstract. E. T. Chamberlain. *Int Marine Eng* 20:8-9 Ja '15  
 Providing a ship with ears; a system for locating other ships and icebergs during fog. R. G. Skerrett. *Il Sci Am* 113:450 N 20 '15  
*See also* Collisions at sea; Davits; Fires at sea; Fog signals; Life preservers; Lifeboats; Lighthouses

**Safety committees**

- Organizing for safety; safety inspectors and safety committees. A. J. Daly. *Mach* 21:281-2 D '14  
 Organizing safety committees. H. A. Russell. *Il Iron Age* 96:69-70 JI 8 '15  
 Results of accident-prevention work in Commonwealth Edison organization. *Elec W* 65:1187 My 8 '15  
 Safety council, National. *See* National safety council

**Safety devices and measures**

- Accident prevention. C. B. Scott. *Am Gas Light J* 103:139-40 Ag 30 '15  
 Accident prevention in power plants. *Power* 42:381-2 Ag 24 '15  
 Accident prevention in the chemical industries. F. W. Keough. *Met & Chem Eng* 13:731-4 O 15 '15; *Excerpts. Am Ind* 16:28-4 N '15  
 Accident prevention; N. E. L. A. committee report. *Elec W* 65:1533-4 Je 12 '15  
 Accident prevention on a business basis. *Elec R & W Elec'n* 68:1029-32 Je 5 '15  
 Accidents that could have been prevented. *Am Gas Light J* 103:35 JI 19 '15  
 Application of educational methods to the reduction of accidents. S. W. Ashe. *Ilum Engr* 8:349-52 Ag '15  
 Carelessness in the factory. A. A. Dowd. *Iron Age* 96:511 S 2 '15  
 Commonwealth Edison company awarded safety medal. *Elec R & W Elec'n* 65:1204 D 26 '14  
 Eye protection for grinders and machinists. H. W. Davis. *Il Mach* 21:570-1 Mr '15  
 Gas safety code of the Bureau of standards. R. S. McBride. *Am Gas Light J* 103:44-5 JI 19 '15  
 Hazards of factory floors. *Il Am Ind* 15:sup1-4 My '15  
 How safety-first devices were displayed in Pittsburgh department store windows. *Il Iron Age* 96:496-9 Mr 4 '15  
 Industrial betterment. F. E. Cardullo. *Il Mach* 22:185-90 N '15  
 Industrial safety. C. B. Scott. *Am Gas Light J* 103:181-2 S 20 '15  
 Industrial safety and principles of management. W. P. Barba. *Am Soc M E J* 37:692-5 D '15; Same cond. *Iron Age* 96:1232-4 N 25 '15  
 Making the safety movement permanent. *Elec Ry J* 45:717, 800-1 Ap 10, 24 '15  
 Organizing for safety; safety inspectors and safety committees. A. J. Daly. *Mach* 21:281-2 D '14  
 Preventing cupola explosions. F. Osswald. *Il diag Iron Tr R* 55:1228+ D 31 '14  
 Report of committee on accident prevention. *Am Gas Inst Pro* 9:pt 1, 82-110; Discussion. 9: pt 1, 111-20 '14  
 Safe hand tools. *Il Iron Tr R* 56:523-4 Mr 11 '15; Same. *Eng & Min J* 99:531-2 Mr 20 '15; Same. *Ind Eng* 15:19-20 Ja '15  
 Safeguarding of ladders, stairs and platforms. *Il diags Am Ind* 15:sup1-4 F '15  
 Safety and welfare work in an electrical plant. C. L. Lucas. *Il Mach* 22:210-14 N '15  
 Safety first for you and me. H. L. Brownell. *Elec Ry J* 45:749 Ap 17 '15  
 Safety first in road building. *Eng Rec* 72:270 Ag 28 '15

Safety in care and use of industrial railways. *diag Foundry* 43:105-6 Mr '15; Same. *Ind Eng* 15:78-5 Ag '15; Same cond. *Eng M* 48:603-5 Ja '15

- Safety in handling refrigerants. A. G. Solomon. *Power* 41:170-1 F 2 '15  
 Safety in sheet metal operations. *Il Am Ind* 15:sup1-4 Ap '15  
 Safety in stone quarrying. O. Bowles. *Il U S Bur Mines Tech Pa* 111:1-46 '15  
 Safety in the home and on the streets. *Il Am Ind* 15:24-5 My '15  
 Safety on the streets. J. P. McCall. *Am Ind* 15:24-5 F '15  
 Safety reminders. *Am Gas Light J* 102:410 Je 28 '15  
 Safety second—service first; abstract. W. H. Blood. *Elec W* 65:422 F 13 '15  
 2d annual Pennsylvania industrial welfare and efficiency conference. *Metal Work* 32:733 D 4 '14  
 Sixth award of the Scientific American medal for safety devices. W. H. Tolman. *Il Sci Am* 112:174 F 20 '15  
 Standardization in safety and sanitation. M. W. Alexander. *Am Ind* 15:26-7 F '15  
 Standardization of safeguards. C. M. Hansen. *Am Ind* 16:20-2 N '15  
 Wisconsin safety rules. *Iron Age* 96:89 JI 8 '15  
 Workmen's co-operation reduces accidents. *Il Iron Age* 96:1051-4 My 13 '15  
*See also* Air brakes; Boilers—Safety devices; Brakes; Car couplings; Coal mines and mining—Safety measures; Cranes, derricks, etc.—Safety devices; Electric engineering—Safety devices; Electric protective apparatus; Electric railroads—Safety devices; Factories—Lighting; Foundries—Safety devices; Goggles; Grinding machines—Safety devices; Helmets; Lightning conductors; Machine shops—Safety devices; Machinery—Safety devices; Mine rescue work; Mining engineering—Safety measures; Motor trucks—Fenders; Railroads—Safety devices; Railroads—Signals; Safety at sea; Safety lamps; Safety valves; Steam shovels—Safety devices; Street railroads—Safety devices; Subways—Safety devices  
 Safety first federation of America  
 1st meeting, New York, July 13. *Elec Ry J* 46:103-5 JI 17 '15  
**Safety lamps**  
 Benzine substitutes for safety lamps. *Colliery* 35:656 JI '15  
 Miners' carbide lamps. J. W. Paul. *U S Bur Mines Circ* 18:1-10 '15  
 Miner's lamps. *Ilum Engr* 7:561-2 D '14  
 Oil vs. electric safety lamps. H. H. Hirsch. *Colliery* 35:335-7 Ja '15  
**Safety lamps, Electric**  
 Electric lights for use about oil and gas wells. H. H. Clark. *U S Bur Mines Tech Pa* 79:1-7 '14; *Excerpts (Electric lamps in gaseous places). Ry R* 56:367 Mr 13 '15  
 Miners' electric safety lamps. *Engineer* 118:548 D 11 '14  
 New type of miner's electric lamp. *Il Elec R & W Elec'n* 66:398-9 F 27 '15; *Elec W* 65:563-4 F 27 '15; *Colliery* 35:507-8 Ap '15; *Iron Tr R* 56:723 Ap 8 '15  
 One year's experience with the electric safety lamp. C. Johnson. *Colliery* 35:548 My '15  
 Pearson's electric miners' lamp works. *Il Engineer* 120:138-9 Ag 6 '15  
 Self-contained portable electric lamps for miners. H. H. Clark. *Ilum Eng Soc* 9:895-908 no 9 '14  
**Safety valves**  
 As dangerous as dynamite: a steam boiler with an inoperative safety valve. *Power* 41:137 Ja 28 '15  
 Calculation of dimensions of safety valves with high lift; abstract. Otto. *Am Soc M E J* 37:481 Ag '15  
 Clips for securing date tags to steam gages and safety valves. C. L. Dickert. *diags Ry Age (Mech ed)* 89:131-2 Mr '15  
 Locomotive safety valve. *diag Ry Age (Mech ed)* 89:255 My '15  
 Massachusetts ammonia safety regulations. F. L. Fairbanks. *diags Power* 42:753-5 N 30 '15

**Safety valves—Continued**

- Method of testing safety valves at the U. S. naval experiment station; abstract. L. R. Ford. Am Soc M E J 37:611-12 O '15  
 Overloading of safety valves. Power 41:282 F 23 '15  
 Safety-valve specifications. A. B. Carhart. Power 41:81-2 Ja 19 '15  
 Safety-valve specifications. G. E. Perkins. Power 41:241-2 F 16 '15  
 Safety valves—a discussion. A. B. Carhart. Power 41:509-11 Ap 13 '15  
 Safety valves for oil fired boilers; abstract. D. MacNicol. diags Am Soc M E J 37:660-1 N '15  
 Visits of inspector Brown. J. E. Terman. diag Power 42:508-9 O 13 '15

**Safety zones. See Street traffic****Sailing vessels**

- One hundred percent efficient, yet obsolete. Int Marine Eng 20:36 Ja '15

**St. Elol, Abbey of**

- Ancient abbey of St. Elol. J. Alaux. Il Am Inst Arch J 3:12-13 Ja '15

**St. Louis, Missouri**

- Progress of city planning in St. Louis. plans Am Inst Arch J 3:271 Je '15

**Architecture**

- Washington university. G. Study. Il plan Arch Rec 37:64-75 Ja '15

**Bridges**

- Building a long concrete viaduct at St. Louis. P. A. Richardson. Il Eng Rec 70:692-3 D 26 '14  
 Completing the new Mississippi river bridge at St. Louis. Eng N 73:954-5 My 13 '15  
 Reinforced-concrete viaduct at St. Louis. Mo. C. W. Martin. Il diags Eng N 74:735-7 O 14 '15  
 St. Louis municipal bridge east approach a steel viaduct nearly 3 miles long. diags Eng Rec 72:634-5 N 20 '15  
 Three-mile approach viaduct. St. Louis municipal bridge. diag Eng N 74:454-5 S 2 '15

**Charter**

- New charter for St. Louis. E. Flad. Am Soc M E J 37:88 F '15

**Park department**

- Development of a unit cost system. N. Cunliff. Il Assn Eng Soc J 53:74-85 Ag '14; Same. Eng & Contr 42:374-8 O 21 '14; Discussion. Assn Eng Soc J 53:85-101, 165-70 Ag-S '14

**Public works**

- Municipal dock for St. Louis. Eng N 74:1101 D 2 '15

**Railroads**

- Eliminating the Tower Grove grade crossing at St. Louis. Il diags plan Eng N 74:52-5 J1 8 '15  
 Elimination of the Tower Grove crossings, St. Louis, Mo. S. L. Wonson. Il diags plans Assn Eng Soc J 55:95-115 O '15; Same cond. Ry Age 59:799-802 O 29 '15; Same cond. Eng Rec 72:627-9 N 20 '15  
 St. Louis, inadequate terminal facilities. Ry Age 59:147-8 J1 23 '15

**Rapid transit**

- Regulation of jitney busses in St. Louis. Munic Eng 48:341-3 Je '15  
 St. Louis service order; Missouri commission fixes service standards, defining rush-hour periods, transition periods and non-rush-hour periods. Elec Ry J 45:961 My 15 '15

**Sanitary affairs**

- Garbage and refuse collection and disposal. Munic Eng 48:340-1 Je '15

**Sewerage**

- New sewer inlets at St. Louis. S. Chivvis. Il diags Eng N 74:652-3 S 30 '15

**Streets**

- Engineering work preliminary to pavement construction. plans Eng N 74:460-1 S 2 '15

**Water supply**

- New intake tower and tunnel. E. C. Davis. Il diags plans Assn Eng Soc J 53:281-300 D '14  
 Opening of St. Louis filtration plant. Il Eng N 73:1002 My 20 '15  
 St. Louis water works improvements. Munic J 39:360-1 S 2 '15  
 St. Louis will operate world's largest mechanical filters next week; views. Eng Rec 71:573-9 My 8 '15  
 St. Louis & San Francisco railroad  
 Abstract of annual report. map Ry Age 59:884-6 N 12 '15  
 Comparison between the 1914 and 1913 fiscal years. map Ry Age 58:119-21 Ja 22 '15  
 St. Louis Southwestern railway  
 Twenty-fourth annual report. map Ry Age 59:792-3, 836-8 O 29 '15  
 St. Paul, Minnesota

**Churches**

- House of Hope Presbyterian church. Il plan Arch Rec 37:410-24 My '15

**Railroads**

- New railway passenger terminal at St. Paul. plans Eng N 73:488-9 Mr 11 '15  
 Plans for the new Union station. diags Ry Age 58:261-3 F 12 '15

**Sakurajima, Mt.**

- Sakurajima eruptions and earthquakes. E. Omori. Sci Am S 79:242-3 Ap 17 '15

**Salaries**

- Way to pay the salesman: salary-plus-commission plan. Elec W 65:1698-1700 Je 26 '15; Same. Am Gas Light J 103:71+ Ag 2 '15

**Salem, Massachusetts**

- Rebuilding Salem, Mass. W. B. Conant. Il Munic J 39:218-19 Ag 12 '15

**Fire, 1914**

- Salem (Mass.) conflagration; with discussion. C. H. Smith. Il W Soc E J 20:172-92 F '15

**Sales**

- Acceptance binds parties to contract. E. J. Buckley. Metal Work 84:655 N 19 '15  
 Balancing production with sales. C. W. Thayer. Mach 21:968 Ag '15  
 Difficulties attending the sale of a business. E. J. Buckley. Metal Work 83:552 Ap 9 '15  
 Exclusive agencies and the Clayton act. Elec R & W Elec'n 66:527-9 Mr 20 '15  
 Inspecting goods after they are received; the buyer's rights and liabilities. E. J. Buckley. Elec R & W Elec'n 67:416 S 4 '15; Same (Right of buyer to reject goods shipped). Metal Work 84:355 S 10 '15  
 Installment sales. S. Walton. J Account 20:143-8 Ag '15  
 Legality of exclusive agencies upheld. Elec R & W Elec'n 66:908 My 15 '15  
 Protecting dealer on producer's guarantee. M. J. Buckley. Metal Work 84:593 N 5 '15  
 Recording returned goods. H. A. Russell. Iron Age 96:585 S 9 '15  
 Sales helps for the dealer. Il Horseless Age 35:531-2 Ap 21 '15

**Sales departments**

- Central-station sales department organization and work. F. D. Beardalee. Elec R & W Elec'n 65:1073-9 D 5 '14  
 Commercial practices in California. H. B. Pitts. Il Elec W 65:1409-12 My 29 '15  
 Way to pay the salesman: salary-plus-commission plan. Elec W 65:1698-1700 Je 26 '15; Same. Am Gas Light J 103:71+ Ag 2 '15

**Sales letters**

- Building business by circular letter. W. J. Woolley. Metal Work 84:42-3 J1 9 '15  
 Building plumbing trade by mail. E. Whitehead. Dom Eng 71:6-8 Ap 3 '15  
 Business methods for the plumber and fitter. W. A. Fink. Dom Eng 70:369; 71:34-5 Mr 20, Ap 10 '15

**Salesmen and salesmanship**

- As Perlmutter would say. "Silence is nix." F. Farrington. Metal Work 84:486-7 O 15 '15  
 Avoiding being at salesmen's or solicitors' mercy. E. J. Buckley. Elec R & W Elec'n 67:486-6 S 11 '15  
 Boy as a factor in selling. Horseless Age 35:427 Mr 21 '15

**Salesman and salesmanship—Continued**

Business hints for dealer and contractor. G. D. Crain, Jr. Elec R & W Elec'n 67:324-5 Ag 21 '15

Business relations of salesman and employer. F. Farrington. Metal Work 84:578-9 N 5 '15

Card recorus in selling accessories. Horseless Age 35:229-30 F 17 '15

Details of Cincinnati appliance campaign. Elec R & W Elec'n 67:360-1 Ag 28 '15

Engineers' salesmanship. A. H. Pohlman. Power 41:723-4 My 25 '15

Enthusiasm and the prospective customer. F. Farrington. Metal Work 84:4-5 JI 2 '15

Enthusiasm keynote of good salesmanship. R. T. Gebler. Metal Work 84:519-20 O 22 '15

Evening courses in retail selling at University of Minnesota. Am Ind 15:18 Ja '15

Going after the business. H. Whitehead. Dom Eng 70:271-2 F 27 '15

Hints for salesmen. J. G. Jones. Am Gas Light J 103:75-6 Ag 2 '15

How a purchasing agent views the electrical salesmen who come to sell him goods. G. R. Jones. Elec W 66:1151-2 N 20 '15

How the sales engineer gets orders. A. A. Dowd. Iron Tr R 56:667-72 Ap 1 '15

How to select, train and hold your selling force. Am Gas Light J 102:166-7 Mr 15 '15

How to use the sales engineer. A. A. Dowd. II diag Iron Tr R 56:459-63+, 667-72, 927-30+ Mr 4, Ap 1, My 6 '15

Hundred-pointer and the counter-jumper. F. Farrington. Metal Work 84:641-2 N 19 '15

Intelligent study always brings reward. F. Farrington. Metal Work 84:107-8 JI 23 '15

Making printing a sales force. I. S. Paull. Inland Ptr 55:568-70 Ag '15

Motion picture in industry utilized by manufacturers of machinery in selling their products. A. L. Morris. II Iron Tr R 56:517-18 Mr 11 '15

N. E. L. A. committee report on education of salesmen. Elec W 65:1528-9 Je 12 '15

N. E. L. A. committee report on merchandising and recent developments in electrical appliances. Elec W 65:1523-3 Je 12 '15; Elec R & W Elec'n 66:1109 Je 12 '15

Optimism and successful salesmen. L. O. Koven. Metal Work 84:608 N 12 '15

Organization meetings. Horseless Age 35:195-6 F 10 '15

The outer and the inner office. Ry R 56:231-2 F 13 '15

Paying commissions on cancelled orders. E. J. Buckley. Elec R & W Elec'n 67:234 Ag 7 '15

Price cutting as viewed by the traveling salesman. J. K. Simpkins. Metal Work 83:433 Mr 19 '15

Printer and his business. L. H. Grieve. Inland Ptr 55:63-4 Ap '15

Producers give assistance to distributors. Metal Work 83:37-8 Ja 1 '15

Railway supply man's point of view. Ry R 56:542-3 Ap 17 '15

Salesman's job requires special knowledge. F. Farrington. Metal Work 84:91-2 JI 16 '15

Salesmanship. Ry R 56:370 Mr 13 '15

Salesmen's training course of the American steel & wire co. C. R. Sturtevant. Ry R 57:28 JI 3 '15

Scientific handling of salesmen. Ind Eng 14:355-61 O 14

Selling helps that have proved effective. II Metal Work 83:2-9 Ja 1 '15

Selling in the irrigation country. II Elec W 65:1414-17 My 29 '15

Selling lamp-socket appliances; an analysis of eleven years' experience in marketing electric household devices in southern California. S. M. Kennedy. Elec W 65:1412-14 My 29 '15

Sheet metal product selling campaigns. R. Danzer. Metal Work 83:42+ Ja 1 '15

Should the salesman collect money? E. H. Whitehorse. Elec W 66:921-3 O 23 '15

Telephoning and letter writing. Ry R 56:603-4 My 1 '15

Value of sales experience to the engineer. W. T. Price. Sibley J 30:11-13 O '15

What should a salesman produce? B. Daniels. Inland Ptr 55:230-1 My '15

Why some men fail and others make good. C. M. Smith. Metal Work 84:609 N 13 '15

Winning the co-operation of the jobber. Metal Work 83:38 Ja 1 '15

Word for and to industrial salesmen. C. E. Chapple. Am Gas Light J 103:89 Ag 9 '15

Word to managers about their men. W. Gould. Elec W 66:536-8 S 4 '15

Works school for salesmen. C. R. Sturtevant. Iron Age 95:1353 Ja 17 '15

See also Advertising; Sales departments; Sales letters

**Sallylic aldehyde**

Effect of certain organic compounds on wheat plants in the soil. F. W. Upson and A. R. Powell. II J Ind & Eng Chem 7:421-2 My '15

**Salol**

Estimation of phenacetin and salol in admixture. W. O. Emery, G. C. Spencer and C. C. LeFebvre. J Ind & Eng Chem 7:681-4 Ag '15

**Saloons.** See Temperance

**Salt**

Composition of the salines of the United States; a correction. J. W. Turrentine. J Ind & Eng Chem 7:687-9 Ag '15

Origin of the Louisiana and east Texas salines. E. G. Norton. map Am Inst Min E Bul 97:93-102 Ja '15; Discussion. 101:1120-2 My '15

Salt and its relation to nutrition. P. G. Stiles. Sci Am S 79:295 My 8 '15

Salt making by solar evaporation. W. C. Phalen. II Am Inst Min E Bul 93:2249-65 S '14; Discussion. 100:859-61 Ap '15

Solubility of mixtures of sodium and potassium chlorides in solutions of hydrochloric acid. W. B. Hicks. diag Am Chem Soc J 37:844-7 Ap '15

United States mining statutes annotated; salines and salt springs. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1194-1214 '15

**Salt Lake City, Utah**

**Streets**

Paving in Salt Lake City. Munic J 37:958 D 31 '14

**Saltpeter, Chile**

American metallurgist in the Chile nitrate field. Eng & Min J 99:252-3 Ja 30 '15

Chilean nitrate industry. M. R. Lamb. II Eng & Min J 99:811-15 My 8 '15

Drag-line machine for nitrate. J. G. Beck. II Eng M 49:429 Je '15

**Salts**

Salts colored by cathode rays. E. Goldstein. Sci Am S 79:318-19 My 15 '15

See also Chemistry

**Salvador, C. A.**

**Commerce**

American sheet metal products in Salvador. G. Harris. II Metal Work 83:300-1 Je 4 '15

**Salvage**

Floating a stranded ship on air; refloating the steamship Zeeland. R. G. Skerrett. II Sci Am 112:84 Ja 23 '15

How compressed air saved the steamship Floriston. R. G. Skerrett. II diag Int Marine Eng 20:270-1 Je '15

Hunting for derelict ships. II Sci Am 112:606 Je 19 '15

In quest of sunken treasure: spherical car for deep sea salvage work. C. L. Edholm. II Sci Am 112:250 Mr 13 '15

Raising the submarine F-4. J. A. Furer. II plan Eng N 74:860-4 N 4 '15

Refloating the steamship Zeeland by compressed air. R. G. Skerrett. Int Marine Eng 20:37-8 F '15

Salvage of the submarine F-4. J. A. Furer. II Sci Am 113:336-7+ O 16 '15

Salvage work on the Empress of Ireland. R. G. Skerrett. II plan diag Int Marine Eng 20:60-2 F '15; Same cond. Sci Am 112:49 Ja 9 '15

Wrecked dredge raised from timber bridge between dump scows. O. S. Proctor. II Eng Rec 72:303 S 4 '15

See also Wrecking

**Salvage ships**

- Mother ship for submarines; a combined salvage and drydock vessel. R. G. Skerrett. *diag Sci Am* 112:480 My 8 '15  
Salvaging sunken submarines. *II diag Sci Am* S 79:232-3 Ap 10 '15  
Submarine to salvage a submarine. R. G. Skerrett. *II Sci Am* 112:342 Ap 10 '15

**Samoa Islands**

- American Samoa. *Sci Am* 112:81 Ja 23 '15

**Sample books.** See Cloth-sample books**Sanatoriums**

See also Convalescent homes; Tuberculosis, Hospitals and sanatoriums for

**Sanatoriums, Municipal**

- Chicago municipal tuberculosis sanitarium. C. A. Erikson. *II plans Brickb* 24:267-72, pl 151-7 N '15

**Sand**

- Cost of hydraulic sand and gravel mining. R. J. Borhek. *Eng & Contr* 43:573-4 Je 30 '15  
Economy effected in the use of river sand as a filter medium at Moline, Ill. *Eng & Contr* 43:236-7 Mr 17 '15  
Effect of fineness of sand and of clay and loam on the strength of mortar. F. L. Roman. *Eng & Contr* 43:403-6 My 5 '15  
Electricity in sand and gravel plants. *II Elec R & W Elec'n* 67:599-602 O 2 '15  
Equipment and operation of plant at Waukegan, Wis. S. E. Bates. *II diag Concrete Cem* 7:165-8 N '15  
How consistency and age affect strength of mortar. *Eng Rec* 72:484 O 16 '15  
Poor sand the cause of the rapid disintegration of a sheet-asphalt pavement. W. M. Cross. *Eng N* 73:621 Ap 1 '15  
Railway sand experience. W. F. Carr. *Elec Ry J* 45:143 Ja 16 '15  
River sand as a filter medium. L. A. Fritze. *Am Water Works Assn J* 2:390-2 Je '15  
Sand for concrete and cement mortar should have jump in grading. R. H. McNelly. *Eng Rec* 72:659-62 N 27 '15  
Standard terminology for filter and concrete sands. *Eng Rec* 71:671 My 29 '15

See also Concrete—Aggregate

**Analysis**

- Mechanical analyses of sands. P. Burgess. *Am Water Works Assn J* 2:493-500 S '15; Abstract. *Eng & Contr* 43:488-9 Je 2 '15; Discussion. *Am Water Works Assn J* 2:500-14 S '15  
Method of making mineralogical analysis of sand. C. W. Tomlinson. *Am Inst Min E Bul* 101:447-56 My '15  
Standard apparatus and procedure recommended for sand analysis. P. Burgess. *Eng Rec* 71:644; Discussion. A. Hazen. 71:644-6 My 22 '15

**Testing**

- Economic side of sand testing. C. M. Chapman and N. C. Johnson. *II Eng Rec* 71:734-7 Je 12 '15; Same. Sibley J 80:65-70 N '15  
Field examination of concrete sand. *diag Concrete Cem* 6:303-5; 7:73-5 Je, Ag '15  
Field examination of concrete sands. C. H. Fuller. *Concrete Cem* 7:156-7 O '15  
Mechanical grading of concrete sand. G. P. Dieckmann. *Concrete Cem* 7:68-9 Ag '15  
New instrument tests sands quickly in the field. *II Eng Rec* 71:821-2 Je 28 '15  
Quality of concrete controlled by tests of sand. C. M. Chapman and N. C. Johnson. *II Eng Rec* 71:801-4 Je 26 '15  
Rapid sand testing device. *II Concrete Cem* 7:139-90 N '15  
Safe concrete demands knowledge of nature of sands. C. M. Chapman and N. C. Johnson. *II Eng Rec* 71:771-4 Je 19 '15  
Sand testing at Denver. E. B. Van De Greyne. *Eng Rec* 71:551 My 1 '15  
Sand testing at New York in the laboratory of the Board of water supply. C. M. Montgomery. *Eng Rec* 71:551-2 My 1 '15  
Wearing tests for sand and gravel. F. L. Roman. *Good Roads n s* 9:186-7 My 1 '15

**Sand, Foundry**

- Crane sand cutting machine. *II Iron Tr R* 56:88-90 Ja 7 '15; Same. *Foundry* 43:77-9 F '15

- How to get high core efficiency. H. M. Lane. *Iron Age* 96:684-6 S 23 '15  
Molding sand. W. J. Keep. *Foundry* 43:380-1 S '15  
Sand mixing plant for a large foundry. *II Iron Age* 94:1273-5 D 3 '14  
See also Sand binders

**Sand binders**

- Functions of sand binders. H. M. Lane. *Metal Ind n s* 13:421-3 O '15

**Sand blast**

- How the Portage silica co. prepares its product to meet the requirements of the foundry trade. *II Foundry* 43:36-7+ Ja '15  
How to operate the sand-blast efficiently. J. M. Betton. *Foundry* 43:182-3 My '15  
Improved sand blast plant, Bridgeport, Conn. *II Foundry* 43:374 S '15  
Plant for sand blasting steel cars. *diag Ry Age* 59:397-8 Ag 27 '15; Same. *Ry Age (Mech ed)* 89:427-8 Ag '15  
Safe sand blasting from an operating booth. R. H. Parsons. *diag Elec Ry J* 44:1258-9 D 6 '14; Same. *Ind Eng* 14:460-1 D '14; Same. *Eng M* 43:748-9 F '15  
Sand blast for marking glassware. G. Spitzer and L. S. Trachsel. *diag J Ind & Eng Chem* 7:426-7 My '15  
Sand blasting steel cars. *diag Ry Age (Mech ed)* 89:376-7 J 1 '15; Same cond. *Ry Age* 59:104-5 J 16 '15

**Sand drying**

- Automatic sand dryer. *II Elec Ry J* 46:455 S 11 '15  
Drying sand in 7-yd. batches. *diag Elec Ry J* 46:193 J 31 '15  
Oil burning sand dryer. F. G. Lister. *diag Ry Age (Mech ed)* 89:407 Ag '15

**Sand flow**

- Experiments on the flow of sand and water through spigots. R. H. Richards, and B. Dudley, Jr. *diag Am Inst Min E Bul* 97:67-72 Ja '15; Same cond. *Met & Chem Eng* 13:120 F '15; Discussion. *Am Inst Min E Bul* 101:1122-3 My '15

**Sand handling**

- Notable floating sand and gravel plant. *II Eng & Contr* 43:476-7 My 26 '15  
Pumping and loading sand; with tables of costs. A. H. Smith. *II Elec W* 66:467-8 Ag 23 '15

**Sand washing**

- Continuous washer cleans 250 yards of sand a day. *plan Eng Rec* 72:611 N 13 '15  
Large capacity sand and gravel washing plant. *II Eng & Contr* 43:526 Je 9 '15

**San Diego, California**

- Panama canal and the ports of the Pacific. A. J. Quigley. *II map Eng M* 43:643-50 F '15

**Bridges**

- Concrete viaduct at San Diego. *II Munic Eng* 49:105-6 S '15

**Panama-California exposition**

- At the Panama-California exposition at San Diego. *II Sci Am* 112:40 J 10 '15  
Lighting at San Diego exposition. *II Elec W* 66:805-7 Mr 27 '15  
Panama-California exposition. *II Eng N* 73:801-2 Ap 29 '15  
Panama-California exposition; Bertram G. Goodhue and the renaissance of Spanish-colonial architecture. C. M. Price. *II plan Arch Rec* 37:229-51 Mr '15

**Public works**

- San Diego's municipal stadium. F. A. Rhodes. *II plan Eng N* 74:577-80 S 23 '15

**Railroads**

- Terminal facilities at San Diego. *II plans Elec Ry J* 45:587-8 Mr 20 '15

**Rapid transit**

- Handling traffic to the Panama-California exposition at San Diego. B. M. Warner. *II map Elec Ry J* 46:508-9 S 18 '15  
Sectionalizing of electric railway feeders at San Diego. H. MacNutt. *plan Elec Ry J* 46:496-9 S 18 '15

## San Diego, California—Continued

## Water, supply

- Development plan for the water distribution system of San Diego. P. H. Thearle. Eng & Contr 43:174-5 F 24 '15  
 San Diego must save all available water. Eng Rec 71:714-15 Je 5 '15  
 Water supply for San Diego, Cal. Eng & Contr 44:sup21-2 Ag 25 '15  
 Water-works improvements at San Diego. diags Eng N 73:343 F 13 '15

## Sandpapering

- Construction of a drum sander. Bldg Age 37: 58 F '15

## San Francisco, California

- Panama canal and the ports of the Pacific. A. J. Quigley. 11 maps Eng M 48:654-7 F '15

## Bridges

- Mission street viaduct. A. J. Cleary. 11 plan Eng N 73:319-20 F 18 '15

## Electricity supply

- Interconnected systems serving San Francisco. 11 diags map Elec W 65:1356-82 My 29 '15

## Harbor

- Improvement of San Francisco's water front. J. Newman. 11 diags Eng N 73:326-8 F 13 '15  
 Suspended fenders a feature of new reinforced-concrete piers at San Francisco. F. G. White. 11 diags Eng Rec 71:231-3 F 20 '15

## Panama-Pacific International exposition

- Carborundum and cork exhibits at the Panama-Pacific international exposition. 11 Met & Chem Eng 13:453-60 J1 '15  
 Engineering features of the Panama-Pacific international exposition. G. L. Bayley. 11 Am Soc M E J 37:571-91, 698-8 O, D '15; Abstract. Eng N 74:345-6 O 28 '15; Discussion. Am Soc M E J 37:698-9 D '15  
 Engineering problems of the Panama-Pacific exposition. A. H. Markwart. 11 plan Eng N 73:329-36 F 13 '15  
 Exhibits at Panama-Pacific exposition: electric railway apparatus shown in both the palaces of transportation and of machinery. Elec Ry J 45:519-20 Mr 13 '15  
 General electric company's exhibits at the Panama-Pacific international exposition. G. W. Hall. 11 Gen Elec R 18:561-71 Je '15  
 Great exposition at San Francisco. 11 Metal Work 84:377-81 S 17 '15  
 Home electrical at the Panama-Pacific international exposition. D. C. Shafer. 11 Gen Elec R 18:572-8 Je '15; Same cond. Elec R & W Elec'n 66:1041-3 Je 5 '15  
 Industrial uses of gas at the Panama-Pacific international exposition. J. B. Redd. Am Gas Light J 103:156-7 S 6 '15  
 Jurors of exhibits at the Panama-Pacific exposition. Iron Age 95:1146-7 My 20 '15  
 Large-scale time-limited construction problems. E. P. Lesley. plan Iron Age 95:79-81 Ja 7 '15; Same cond. Eng M 48:391-3 Mr '15  
 Machinery exhibit compared with those of earlier expositions. 11 Power 41:250-6 F 23 '15  
 Manufacturers' exhibits at the Panama-Pacific exposition. Elec W 66:833-6 Mr 27 '15  
 Mechanical engineering at the Panama-Pacific international exposition. G. W. Dickie. 11 Am Soc M E J 37:592-600 O '15  
 Nation in perspective; Canada at the Panama-Pacific exposition. E. H. Hurlbut. 11 Sci Am S 80:17, 24-5 J1 10 '15  
 Outline of exhibits of products of mechanical engineering. 11 Iron Age 96:142-9 J1 15 '15  
 Panama canal in miniature operates at exposition. 11 Eng Rec 71:434-5 Ap 3 '15  
 Panama-Pacific exposition. F. R. Low. 11 diags Power 42:180-4, 225-9, 261-6, 290-3, 341-3, 374-7, 444-7, 580-8, 730-3 Ag 10-S 28, O 26, N 23 '15  
 Petroleum exhibit—San Francisco Panama-Pacific international exposition, February 20 to December 4, 1915. J Ind & Eng Chem 7:259-60 Mr '15  
 Printer's trip to the California expositions. E. C. Andrews. 11 Inland Ptr 55:372-6 Je '15  
 Railway exhibit at the Panama-Pacific international exposition. 11 plan Ry R 56:685-8, 882-5 My 22, Je 26 '15

- Railways and the California expositions. 11 Ry Age 59:461-4, 499-502 S 10-17 '15  
 Road and street exhibits at the Panama-Pacific international exposition. 11 Good Roads n s 10:154-9 S 4 '15  
 San Francisco's notable engineering works. 11 Eng Rec 71:229-30 F 20 '15  
 What the Panama-Pacific exposition means to civil engineering and contracting. Eng Rec 71:619-20 My 15 '15

## Amusement features

- Aeroscope a novel feature of Panama-Pacific exposition. 11 Eng Rec 71:423 Ap 3 '15  
 Aeroscope at the Panama-Pacific exposition. 11 Elec Ry J 46:31-2 J1 3 '15  
 Anchored airship: structural amusement device weighing 620 tons. 11 Iron Age 95:184 Ja 21 '15  
 Joy riding in the sky. 11 Sci Am 112:344 Ap 10 '15

## Architecture

- Color in architecture at the Panama-Pacific exposition. W. L. Woollett. 11 Arch Rec 37: 437-44 My '15  
 Four drawings. J. M. Rose. Arch Rec 37: 228a-228h Mr '15  
 International Panama-Pacific exposition. 11 Sci Am 112:194-5 F 27 '15  
 Panama-Pacific exposition; plan and views. L. C. Mullgardt. Arch Rec 37:192-228 Mr '15  
 Panama-Pacific international exposition; buildings and their cost. G. K. Harrison. 11 Am Ind 15:16-20 Mr '15  
 Scene painting in architecture. W. L. Woollett. 11 Arch Rec 38:571-4 N '15  
 Texture and color at the Panama-Pacific exposition. P. B. Deniville. 11 Arch Rec 38:562-70 N '15  
 Three impressions of the exposition. H. R. Mainzer; G. H. Gray; J. C. Levi. 11 Am Inst Arch J 3:467-70 N '15

## Auditorium

- San Francisco's new exposition-civic auditorium. 11 Elec W 65:313 Ja 30 '15  
 Ventilation and other features of exposition auditorium at San Francisco. 11 Eng Rec 71: 237-8 F 20 '15

## Electric equipment

- Electrical equipment of Panama-Pacific exposition. 11 diags plan Elec W 64:1241-7 D 26 '14  
 Problems in electrical inspection at the Panama-Pacific international exposition. G. A. Cleary. Elec R & W Elec'n 67:22-4 J1 3 '15  
 Wiring and conduit work at the Panama-Pacific exposition. A. A. Willoughby. 11 diag Elec R & W Elec'n 67:365-8, 432-5, 472-4 Ag 28-S 11 '15

## Lighting and heating

- Gas lighting at the Panama-Pacific international exposition. C. B. Babcock. 11 Am Gas Light J 102:234-5 Ap 12 '15  
 Illumination at the Panama-Pacific exposition. 11 Elec W 65:1383-6 My 29 '15  
 Illumination by ornamental luminous arc lamps at Panama-Pacific international exposition. Elec R & W Elec'n 66:1072-3 Je 5 '15  
 Illumination features at Panama-Pacific international exposition. A. A. Willoughby. 11 Elec R & W Elec'n 66:1032-4 Je 5 '15  
 Illumination of Panama-Pacific exposition. G. L. Bayley. 11 Elec W 65:391-5 F 13 '15  
 Illumination of the Panama-Pacific international exposition. W. D'A. Ryan. 11 Gen Elec R 18:579-93 Je '15; Same cond. Sci Am S 79:376-7 Je 12 '15; Same cond. Illum Engr 8:305-9 J1 '15  
 Panama-Pacific exposition; committee report. Illum Eng Soc 10:534-7 no 7 '15; Same cond. Am Gas Light J 103:276 N 1 '15  
 Panama-Pacific international exposition at night; how the illuminating engineer uses light decoratively. H. M. Wright. 11 Sci Am 112:373-4 Ap 24 '15  
 Spectacular illuminating effects at the Panama-Pacific exposition. 11 Sci Am 112:180-1 F 20 '15



**San Francisco—Panama-Pacific expos'n.—Cont.***New York state building*

Facilitating timber design; tables and diagrams used in connection with the structural work on the New York state building. S. Diamant. Eng Rec 71:296-7 Mr 6 '15

*Palace of horticulture*

Design of 152-foot steel-framed dome. A. W. Earl and T. F. Chace. 11 diags Eng Rec 70:451-4, 482-4 O 24-31 '14; Same. Eng & Contr 42:314-20 S 30 '14

Designing a steel dome for the horticultural palace. A. W. Earl and T. F. Chace. diags Eng N 74:208-12 J1 29 '15

Framing of the dome of the palace of horticulture. A. W. Earl and T. F. Chace. 11 diags Eng N 74:112-15 J1 15 '15

Spectacular illuminating effects at the Panama-Pacific exposition. 11 Sci Am 112:180-1 F 20 '15

*Palace of machinery*

Abrasive products at fair. 11 Iron Tr R 57:487 S 9 '15

*Palace of mines and metallurgy*

Co-operative metallurgical exhibit at the Panama-Pacific international exposition. A. E. Wells and G. H. Clevenger. 11 Met & Chem Eng 13:743-5 O 15 '15

Films and models attract interest in United States steel corporation's exhibit. 11 Iron Tr R 57:403-8 Ag 26 '15

Panama-Pacific exposition. 11 plan Colliery 35: 657-68 J1 '15

Steel corporation at Panama-Pacific exposition. Colliery 35:389-90 F '15

United States steel corporation exhibit at the Panama-Pacific exposition. Iron Age 94: 1425-6 D 17 '14

What the Panama-Pacific international exposition means to the metallurgical and chemical engineer. 11 Met & Chem Eng 13:339-40 My '15

*Palace of transportation*

Motor car exhibits at the Panama exposition. C. L. Edholm. 11 Horseless Age 36:35-9 J1 14 '15

Transportation exhibits at San Francisco. 11 Elec Ry J 45:504-5 Mr 13 '15

Transportation exhibits at the Panama exposition. W. S. Wollner. Ry Age 58:373-5 F 26 '15

*Sewerage*

Design of the sewerage system for the Panama-Pacific international exposition. W. C. Willard. diags plan Eng & Contr 42:434-40 N 4 '14

Plumbing at exposition. A. H. Markart. Metal Work 83:837-8 Je 11 '15

*State buildings*

State buildings at Panama exposition. 11 Bldg Age 37:46-8 My '15

*Tower of jewels*

Design and construction of the 435-ft. steel framed tower of jewels. F. S. M. Harris. 11 diags Eng & Contr 43:47-54 Ja 20 '15; Same cond. Eng N 73:866-72 My 6 '15; Same cond. Eng Rec 71:112-16 Ja 28 '15

Exterior wooden framing of the tower of jewels. plans Eng & Contr 43:377-9 Ap 28 '15

*Transportation*

Carrying the Panama-Pacific exposition visitors. 11 Eng N 74:770-1 O 21 '15

Transportation in the fair grounds; intramural railway, auto trains, rolling chairs and moving platform. 11 Elec Ry J 45:754-5 Ap 17 '15

*Water supply*

Engineering features of the Panama-Pacific international exposition. G. L. Bayley. 11 Am Soc M E J 37:585-91 O '15; Abstract. Eng N 74:845-6 O 28 '15

*Public works*

Construction progress on the Twin Peaks tunnel. A. J. Cleary. 11 diags Eng N 74:869-71 N 4 '15

New San Francisco has risen from the ruins of 1906. 11 map Eng Rec 71:223-5 F 20 '15  
San Francisco shore protection. diags Eng N 74:571 S 16 '15  
San Francisco's notable engineering works. 11 Eng Rec 71:236-30 F 20 '15

*Rapid transit*

Front-end fare collection improves service at San Francisco. H. T. Jones. 11 Elec Ry J 45:512-14 S 18 '15

How the exposition crowds are being handled at San Francisco. Elec Ry J 45:642 Mr 27 '15

Improvements in transit lines to handle exposition traffic. T. A. Cashin. 11 Elec Ry J 46: 518-19 S 18 '15

Municipal street railways. A. J. Cleary. 11 map Eng N 73:320-4 F 18 '15

Stockton street tunnel and Twin Peaks tunnel in San Francisco. A. J. Cleary. 11 map Eng N 73:314-17 F 18 '15

Time-table practice of the San Francisco-Oakland terminal railways. U. S. Slater. Elec Ry J 46:521-2 S 18 '15

Two-car trains on 25 per cent grade. diags Elec Ry J 45:977-8 My 22 '15

Two-mile street railway tunnel at San Francisco. Eng Rec 71:47-8 Ja 9 '15

*Sanitary affairs*

Garbage and refuse disposal and experiences with incineration at San Francisco. A. J. Cleary. 11 plan Eng N 73:301-4 F 18 '15

*Sewerage*

San Francisco's sewerage system. A. J. Cleary. 11 diags maps Eng N 73:305-10 F 18 '15

*Streets*

Boulevard system of San Francisco. J. M. Owens. map Eng N 74:498-9 S 9 '15

Constructing rock tunnel of 50-ft. clear width. Stockton st., San Francisco. H. G. Tilton. 11 diags plan Eng & Contr 43:93-6 F 3 '15

Pavement problems and experience in San Francisco. J. M. Owens. 11 Long N 72:1180-2 D 10 '14

San Francisco, the exposition city. 11 Good Roads N 10:133-9 S 4 '15

Street pavements, roads and boulevards. A. J. Cleary. 11 Eng N 73:311-13 F 18 '15

Tunnel streets at San Francisco. T. A. Church. Munic J 38:767-8 Je 3 '15

*Water supply*

Hetch Hetchy water supply project. Eng & Contr 43:sup22-3 Mr 31 '15

Hydraulic fill dam for an earthquake region: work on the Calaveras reservoir of the San Francisco water supply. Sci Am 112:154+ F 13 '15

Present water-supply of San Francisco. Eng N 73:328 F 18 '15

Probable utilization of privately owned water works at San Francisco in connection with new municipal supply. M. M. O'Shaughnessy. Eng & Contr 42:230-1 S 2 '14

Progress on Hetch Hetchy water-supply. 11 Eng N 74:378 Ag 19 '15

San Francisco's auxiliary water-supply for fire protection. A. J. Cleary. 11 plan diags Eng N 73:290-7 F 18 '15

San Francisco's future water-supply: Hetch Hetchy project. A. J. Cleary. 11 Eng N 73: 298-301 F 18 '15

*San Francisco municipal railways*

Annual report. Elec Ry J 45:1231 Je 26 '15

*Sanitary chemistry*

See also Food—Analysis; Sewage disposal; Water purification

*Sanitary engineering*

Convention of American public health association sanitary engineering section. Eng Rec 70:sup285-6 D 12 '14

Sanitary engineering in 1914. Engineer 119:31-2, 55-6 Ja 8-15 '15

Science of domestic engineering. T. J. Claffy. Dom Eng 70:7-8 Ja 2 '15

See also Filters and filtration; Heating; Municipal engineering; Plumbing; Public comfort stations; Refuse and refuse dis-

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Sanitary engineering, American society of. See American society of sanitary engineering

Sanitary engineering, New Jersey society of. See New Jersey society of sanitary engineering

**Sanitary engineers**

Duties of the practical sanitary engineer. J. Campbell. Metal Work 83:931 Je 25 '15

**Sanitation**

Construction camp, Elephant Butte, N. M. J. D. Graham. Il diags map Eng N 72:1300-4 D 31 '14

Country districts need plumbing regulations. F. K. Chew. Metal Work 84:659 N 19 '15

Economy in life saving; abstract from a report to the American society of municipal improvements. Munic J 39:816-17 O 21 '15

Improving sanitary conditions on the Ashokan reservoir watershed. G. G. Honness. Eng & Contr 44:213 S 15 '15

Master plumber's view of sanitation. R. A. Gibson. Metal Work 83:541 Ap 9 '15

National association of master plumbers sanitary committee's report. Dom Eng 72:112-13 Jl 24 '15

Old time sanitation problems. Metal Work 84: 607-8 N 12 '15

Relative values in sanitation. Eng & Contr 42: 133-5 Ag 5 '14

Sanitary engineer's views on housing. T. J. Claffy. Il Dom Eng 73:5-6, 45-6 O 2-9 '15

Sanitation of Iquitos, Peru. G. M. Converse. Il Eng N 73:201 F 4 '15

Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:194-7, 224-6, 254-6, 284-5, 313-15, 338-40 Ag 14-S 18 '15

See also Disinfection and disinfectants; Dust removal; Factory sanitation; Foundry sanitation; Military hygiene; Plumbing; Refuse and refuse disposal; Sanitary engineering; Sewage disposal; Sewerage; Smoke prevention; Ventilation; Water purification; Water supply

**Santa Barbara, California****Water supply**

Progress of Santa Barbara water-supply project. K. Q. Volk. Eng N 74:1080-1 D 2 '15

Santa Fe railroad. See Atchison, Topeka & Santa Fe railroad

Santo Domingo. See Mines and mineral resources—Santo Domingo

**Saratoga Springs, New York**

Lincoln baths rival continental pools. Il plan Metal Work 84:307-8 S 3 '15

**Sardinia****Industries and resources**

Calamine mines of Sardinia. C. W. Wright. Il map Eng & Min J 100:825-8 O 16 '15

Gennamari mill. C. W. Wright. diags Eng & Min J 100:794-6 N 13 '15

**Sashes**

Home instruction for sheet metal workers. W. Neubecker. diags Metal Work 81:524-5, 681-2, 718-19; 82:457-8, 615-16, 667-8; 83:498-9, 865-7, 810-11 Ap 10, My 22-29, O 2, N 8, 30 '14, Ap 2, My 7, Je 4 '15

**Saskatchewan**

Scope of engineering reports and plans for sewerage and sewage disposal works in Saskatchewan. Eng & Contr 42:155-6 Ag 12 '14

**Saskatoon, Saskatchewan****Bridges**

Concrete arch bridge at Saskatoon. Il diags Eng N 73:434-6 Mr 4 '15

Saturated air. See Air

**Saturators**

New method and furnace for the determination of the softening temperature of coal ash under fuel-bed conditions. A. C. Fieldner and A. L. Feild. Il diags J Ind & Eng Chem 7:829-35 O '15

**Sault Ste. Marie, Michigan****Bridges**

Double-leaf bascule railway bridge. Il diags Engineer 120:246-7 S 10 '15

Saunders, William Lawrence, 1856-

President Am. Inst. M. E. F. W. Iredell. por Eng N 73:389-90 F 25 '15

Sketch. por Eng M 50:209 N '15

**Sausages**

New casing for sausages. W. P. Cohoe, E. C. Fox, and A. J. Acton. Sci Am 112:235-4 Mr 6 '15

**Savannah, Georgia****Sanitary affairs**

Refuse disposal at Savannah. El. R. Conant. Munic J 38:186-8 F 11 '15

**Wharves**

Design and construction features of the Ocean steamship co.'s terminal at Savannah. Il plans Eng & Contr 44:343-4 N 3 '15

Saw mills. See Sawmills

**Sawdust**

Gas from sawdust. J Ind & Eng Chem 7:542-3 Je '15

**Sawdust as fuel**

Sub-bituminous coal and sawmill waste in producer plant. G. S. Wilson. Il Power 42: 412-3 S 28 '15

**Sawmills**

Electricity in a modern saw mill. Il Elec R & W Elec'n 66:290-2 F 13 '15

Electricity in the lumber industry. E. F. Whitney. Il diags Am Inst. E. M. Pro 33:1835-53 D '14; Discussion. 34:439-51 Mr '15

Sawmill engineering. J. E. Noble. plan Power 41:683-4 My 18 '15

Sawmill for form construction. H. E. Ketchum. Il Eng N 74:986-7 N 18 '15

**Saws**

Abusing hack saws and cutter wheels. Il Metal Work 84:238 Ag 20 '15

Automatic band saw sharpener. Il Iron Tr R 56:666 Ap 1 '15

Band saw for light metal shapes. Il Iron Age 96:85 Jl 8 '15

Brazing outfit for narrow band saws. F. W. Barrows. Il diag Foundry 43:317-18 Ag '15

High-speed friction saw for shapes. Il Iron Age 95:92 Ja 7 '15

Home-made saw for tubing, commutator bars, etc. R. H. Parsons. diags Elec Ry J 45:849 My 1 '15

New metal band saw. Il Foundry 43:328-9 Ag '15

Recent high-speed hack saw machine. Il Iron Age 96:519 S 2 '15; Ry Age (Mech ed) 89:544 O '15

Self-contained friction saw. Il Iron Tr R 56: 327-8 F 11 '15

**Safety devices**

Adjustable guard for circular saws. Il Iron Age 96:877 O 14 '15

Adjustable saw guard. Il Ry Age (Mech ed) 89:56 F '15

**Scaffolding**

New scaffold hoist machine. diag Concrete Cem 7:48 Jl '15

Safety staging hook. D. E. Charlton. diags Eng & Min J 100:311 Ag 31 '15

Staging hangers for riveters on structural work. Il Eng & Min J 100:677 O 23 '15

Suspended scaffold for building construction. diags Eng N 73:174-5 Ja 28 '15

See also Shoring and underpinning

**Scales**

Automatic scales; abstract. F. J. Schlink. Am Soc M E J 37:488 Ag '15

Direct reading analytical balance. Il Sci Am 113:325-4 O 9 '15

Heusser multiple weight attachment for chemical balances. W. Heusser. Il Eng & Min J 100:814 Ag 31 '15

Making a chemist's balance. F. W. Salmon. diags Power 42:617-18 N 2 '15

Railroad scale testing by the Bureau of standards. Ry R 56:553-4 Ap 24 '15

Scales, Track. See Track scales

## Schenectady, New York

## Sanitary affairs

Municipal garbage-reduction plant. S. Gertz. *Il plan Eng N 73:820-2 Ap 29 '15*

## Sewerage

Schenectady's sewage disposal plant; nine shallow imhoff tanks and three acres of sprinkling filters. *Il plans Munic J 38:493-504 Ap 15 '15*

Schenley park. See Pittsburgh—Parks

Scherblus compensator. See Phase advancers

## Scholarships and fellowships

Research fellowships in the engineering experiment station, University of Illinois. Elec R & W Elec'n 65:1225 D 26 '14

## School accounting

School accounting and costs. A. Hiller. *J Account 19:437-55 Je '15*

School architecture. See Schoolhouses

School buildings. See Schoolhouses

School houses. See Schoolhouses

## School hygiene

School sanitation and students' health. W. H. Smith. *Metal Work 83:801-3 Ap 23 '15*

See also Schoolhouses—Heating and ventilation

School lighting. See Schoolhouses—Lighting

School ships. See Schoolships

## Schoolhouses

Addison school, Cleveland, Ohio, and Walker school, Concord, N. H.; views and plans. Brickb 24:pl 146-50 O '15

Brick schoolhouse at Pickens, Miss. *Il diag plans Bldg Age 37:27-31 O '15*

Downers Grove kindergarten, Downers Grove, Ill.; views. Brickb 24:pl 103-5 JI '15

Edward Devotion school, Brookline, Mass., and Vose school, Milton, Mass.; views and plans. Brickb 24:pl 19-21 F '15

Eight-room brick schoolhouse. *Il diag plans Bldg Age 37:45-8 Ag '15*

Five examples of cantilevered auditorium balconies. *diag Eng Rec 72:234-5 Ag 21 '15*

Francis W. Parker open-air school of San Diego; views and plan. Arch Rec 37:88-90 Ja '15

Modern schoolhouse; corridors and stairways. W. H. Kilham. *Il plans Brickb 24:39-42 F '15*

Modern schoolhouse; exposure and plan. W. H. Kilham. *Il plans Brickb 24:38-8 Ap '15*

Modern schoolhouse; special features. W. H. Kilham. *Il plans Brickb 24:141-4 Je '15*

Modern schoolhouse: the class room. W. H. Kilham. *plans Brickb 24:3-8 Ja '15*

Modern schoolhouse; wardrobes, toilets, and special rooms. W. H. Kilham. *Il diag Brickb 24:59-62 Mr '15*

Norwood high school, Norwood, Ohio; views and plan. Brickb 24:pl 44-5 Mr '15

Plumbing equipment in Jersey high school. *Il Metal Work 84:77+ JI 16 '15*

Plumbing work in Kentucky high school. *Il Metal Work 84:146-8 JI 30 '15*

School building in Michigan and Connecticut. Am Inst Arch J 3:437-8 O '15

See also School hygiene

## Cost

Cost of schoolhouse construction, with a proposed unit based on cubical contents. B. C. Baldwin. Heat & Ven 12:22-7 Je '15

Modern schoolhouse; cubage and cost. W. H. Kilham. *Il plans Brickb 24:107-10 My '15*

## Electric equipment

Government furnishes cheap electricity in southern Idaho. H. B. Walker. Power 41: 228-9 F '15

## Heating and ventilation

Chicago ventilation commission first report. *Il Metal Work 83:633-5+ Ap 30 '15*

Downward ventilation in a Rockford, Ill., schoolhouse; with discussion. C. E. Beery. *Il plans Am Soc Heat & V E 19:68-81 '13*

Experiment in school room ventilation with reduced air supply through individual ducts; with discussion. F. Bass. *Il Am Soc Heat & V E 19:328-60 '13*

Experiment in ventilating a schoolroom. *Il Dom Eng 73:38-41 O 2 '15*

Experiments on humidifying air at the Oliver Wendell Holmes school; with discussion. C. F. Eveleth. *plans Am Soc Heat & V E 19:109-27 '13*

Heating a country school house in Maine. E. B. Harvey. *plans Metal Work 82:735 D 4 '14*

Heating a two-story brick schoolhouse; description of a gravity steam system. *Il plans Bldg Age 37:53-5 Ja '15*

Heating and ventilating Cos Cob school, Greenwich, Conn. *Il plan Metal Work 84: 637-8 N 19 '15*

Heating and ventilation of schoolhouses. H. L. Alt. *plans Brickb 24:165-8 JI '15*

How to figure school house ventilation. *Dom Eng 72:228 Ag 21 '15*

Plumbing and heating in new Lebanon school, Greenwich, Conn. *Il plan Metal Work 84:13-14 JI 3 '15*

Recent tests on recirculation of washed air. G. L. Larson. *Il Metal Work 84:375-7+ N 26 '15*

Recirculating of air in a school in Minneapolis. F. Bass. Heat & Ven 12:27-30 Mr '15

Recirculation of air for schools. I. N. Evans. Heat & Ven 11:46-53 Je '14; 12:43-5 Ap '15

Report of the committee on schoolroom ventilation. Am Soc Heat & V E 19:104-8 '13

Space requirements for boilers of various types in school buildings. T. W. Reynolds. *diag Heat & Ven 12:17-19 JI '15*

Standard details of heating and ventilating work. F. G. McCann. *diag plans Metal Work 81:31-3, 125-6, 234-5, 302-3, 363-4, 421-4, 494, 511+, 606-7; 82:273-4, 460, 706-7; 83: 140-50, 281-2 Ja 2, 16, F 6, 20, Mr 6, 20, Ap 3-10, My 1, S 4, O 2, N 27 '14, Ja 22, F 19 '15*

## Lighting

Safeguarding the eyesight of school children. M. Luckiesh. *bibliog Il Illum Eng Soc 10: 181-202 no 2 '15; Abstract. Illum Engr 8:297-9 JI '15*

School room lighting. F. L. Godínez. *Il Arch & Bldg 47:365-7, 400-2 O-N '15*

## Toilet rooms

Modern plumbing equipment in Cos Cob school, Greenwich, Conn. *Il Metal Work 84:378+ N 26 '15*

Modern schoolhouse; wardrobes, toilets, and special rooms. W. H. Kilham. *diag Brickb 24:60-1 Mr '15*

Modern toilet rooms in public schools. J. Graham. *plans Dom Eng 70:332-4, 402-5 Mr 13, 27 '15*

Plumbing equipment of Montclair, N. J., high school. *Il plan Metal Work 84:483-4+ O 15 '15*

Rational design of sanitary equipment. *Il plan Metal Work 84:587-8 N 5 '15*

## Schoolhouses, Portable

Chicago adopts portable schoolhouse idea. *Il plan Metal Work 84:404-5 S 24 '15*

Portable schoolhouses in Chicago. *Il diag Bldg Age 87:37-40 My '15*

Schools. See Correspondence schools and courses; Evening and continuation schools; Trade schools

## Schools and shops, Cooperation of

Cooperation between employers and the schools. W. B. Hunter. Am Soc M E J 37: 278-9 My '15

Co-operative technical schools meet present needs. F. E. Ayer. Eng N 74:1059-61 D 2 '15

Learning through doing. Sci Am 112:624 Je 26 '15

McComb apprenticeship plan, Illinois Central railroad. H. N. Seney. Ry R 57:619-20 N 13 '15

Practicing engineers and industrial education. F. G. Bonser. Eng N 72:1133-4 D 3 '14

Type of the new apprenticeship at the Beverly, Mass., industrial school. W. A. O'Leary. Am Ind 15:26-7 My '15

## Schoolships

Schoolship Grandduke Friedrich August. Int Marine Eng 20:615-16 N '15

Schoop metal spray. See Metal coating

## Science

- Common aims of science and humanity. A. Schuster. *Engineer* 120:252-3 S 10 '15  
Emotionalized science. *Sci Am* 112:172 F 20 '15  
Future of science. *Sci Am* S 79:370-1 Je 12 '15  
German science: abstract. *Ind Eng* 14:440 N '14  
Plea for scientific methods. *Sci Am* 112:62 Ja 16 '15  
Political importance of science. *Sci Am* 111:518 D 28 '14  
Recent significant developments in science and engineering. Sibley J 29:103-9 Ja '15;  
Same. *Sci Am* S 79:32 F 6 '15  
Science in the daily press. R. A. Gregory. *Illum Engr* 8:203-7 My '15  
Scientific solidarity in wartime. *Sci Am* 112:398 My 1 '15  
See also Chemistry; Geography; Geology; Inventions; Mathematics; Radioactivity; Scientific expeditions; Technology; Weights and measures, Zoology

## Dictionaries

- Wanted—a polyglot scientific dictionary. *Sci Am* 112:336 Ap 10 '15

## Terminology

- Science and lexicography. *Sci Am* 112:78 Ja 23 '15

## Science and state

- Awards for new truth. *Sci Am* 113:392 N 6 '15  
Practical devices and the lack of capital. C. E. Duryea. *Sci Am* 113:119 Ag 7 '15

## Scientific American

- Seventy years of the Scientific American. II *Sci Am* 112:540-3, 546 Je 5 '15

## Scientific American medal

- Sixth award of the Scientific American medal for safety devices. W. H. Tolman. II *Sci Am* 112:174 F 20 '15

## Scientific education

- England's tardy recognition of applied science. W. R. Whitney. *J Ind & Eng Chem* 7:819-22 O '15

## Scientific expeditions

- Roosevelt-Rondon scientific expedition. L. E. Miller. II *Sci Am* S 79:248-9, 268-70 Ap 17-24 '15

## Scientific management

- Abolition of scientific management in government shops. L. W. Moffett. II *Iron Tr R* 56:983-6+ My 13 '15  
Application of engineering methods to the problems of the executive, director and trustee. H. Godfrey. *Am Soc M E J* 37:334-40 Je '15  
Applying scientific management. H. K. Hathaway. *Iron Tr R* 57:739-42+, 787-93 O 14-21 '15; Same. *Foundry* 43:440-4, 502-7+ N-D '15  
Brief on management; testimony of Carl G. Barth before the Federal commission on industrial relations. *Iron Age* 96:1065-6 N 4 '15

- Business men to investigate Taylor system. *Iron Age* 95:964-5 Ap 29 '15

- Construction management. S. E. Thompson and W. O. Lichtner. II *diag W Soc E J* 29:109-29 F '15; Same cond. *Eng & Contr* 43:438-32 My 12 '15; Discussion. *W Soc E J* 20:129-51 F '15

- Co-operative spirit and industrial peace. F. B. Gilbreth and L. M. Gilbreth. *Iron Age* 96:528-30 S 2 '15

- Criminal speeding-up system—and some facts. W. Crozier. *Am Ind* 15:30-1 Ja '15

- Departmental work planning system at Portland, Ore. F. P. Maize. II *Elec Ry J* 46:565-7 S 18 '15

- Economic choice of shovels for handling different classes of material. C. W. Hartley. *Eng & Contr* 48:802-3 Mr 31 '15

- Executive's problem; an analysis of what is involved in different forms of management. G. D. Babcock. *Iron Age* 96:419 Ag 19 '15

- First principles of shop planning. F. M. Perkins. II *Foundry* 43:866-72 S '15

- Government shop management. W. Crozier. *Iron Age* 96:954 O 21 '15

- Individual in modern management. F. B. Gilbreth and L. M. Gilbreth. *Iron Age* 96:802-4 O 7 '15; Excerpts (Practical side of scientific management). *Metal Work* 84:630 N 12 '15

- Labor problems in scientific management. *Iron Age* 94:1369-72 D 10 '14

- Labor union, scientific management and the government. *Ind Eng* 15:8 Ja '15

- Labor vs. scientific management. R. T. Kent. *Iron Tr R* 56:471-5 Mr 4 '15

- Literature of industrial management. J. R. Dunlap. *Eng M* 49:163-6 My '15

- New certificate of character for manufacturers. R. G. Valentine. *Ind Eng* 15:40-3 F '15

- Operating a foundry on a scientific basis: a large Detroit shop specializing in aluminum castings. F. A. Parkhurst. II *Foundry* 48:443-7, 479-86; 44:21-6, 53-8 N '14-F '15

- Principles of scientific management. F. W. Taylor. *Ind Eng* 15:85-9 S '15 (to be cont)

- Rider to army bill. *Iron Age* 95:430 F 18 '15

- Riders to appropriation bills not to work as management opponents desired. *Iron Age* 95:593-4 Mr 11 '15

- Scientific handling of salesmen. *Ind Eng* 14:385-91 O '14

- Scientific management and the labor problem. R. T. Kent. *Ind Eng* 14:418-21 N '14

- Scientific management for the factory of moderate size. D. T. Farnham. *Eng M* 50:46-51 O '15

- Scientific management in a cotton weave room. *Textile World* 49:526-8 Ag '15

- Scientific management in the office. R. T. Kent. *Iron Age* 95:82-6, 142-4 Ja 7-14 '15

- Scientific management under the X-ray. *Iron Age* 96:1236-8 N 25 '15

- Status of scientific management in the war and navy department plants. *Eng & Contr* 43:506 Je 9 '15

- System and its abuse. J. Calder. *Iron Age* 96:1043-4 N 4 '15

- Taylorism and the bonus system. W. L. Myles. *Mach* 21:404-5 Ja '15

- Three position plan of promotion. F. B. Gilbreth and L. M. Gilbreth. *Iron Age* 96:1057-9 N 4 '15

- Ultimate type of management. J. H. Van Deventer. *Eng M* 49:394-401 Je '15

- Value of preliminary sketches and layouts in production work. A. A. Dowd. *diag Horseless Age* 36:232-4 S 1 '15

- Wage systems of scientific management. *Ind Eng* 15:45-50 F '15

- See also Accounting; Bonus system; Cost accounting; Efficiency, Industrial; Employees; Factory management; Foundry management; Machine shop management; Mine management; Motion study; Office management; Printing offices—Management; Purchasing; Railroads—Management; Records; Routing systems; Shop management; Stores systems; Task system; Time study

- Scientific research

- Astronomical and mathematical research. Prof. Schlesinger. *Sci Am* S 79:168 Mr 13 '15

- German colonies as outposts of science. *Sci Am* 111:450 D 5 '14

- Knowledge and research. R. W. Raymond. *J Ind & Eng Chem* 7:328-33 Ap '15

- National physical laboratory: annual report. *Engineer* 119:823-4 Je 25 '15

- Rational research. *Sci Am* 112:376 Ap 24 '15

- Relation of physical science to the development of engineering. R. C. Gibbs. Sibley J 29:129-32 Ja '15

- Science in the war and after the war. J. A. Fleming. *Sci Am* S 80:338-9 N 27 '15; Same cond. *Engineer* 120:336-7 O 8 '15

- See also Industrial research; Laboratories

- Scientific terminology. See Science—Terminology

- Scientists

- Random reflections on artists and scientists. *Sci Am* 112:329 Mr 6 '15

- Scleroscope

- Standardization of scleroscope observations. J. J. Ralph. *diag Mach* 22:52-3 S '15

- Scotch tweed. See Tweed

## Scotland

## Public works

Institution of civil engineers: presidential address. B: H. Blyth. Engineer 118:438, 458-9, 514-16 N 6-13, 27 '14

## Scows

Concrete scow has withstood 4 $\frac{3}{4}$  years' hard service. Eng Rec 72:71 J1 17 '15  
Drill boat which lifts itself clear of the water. Il Eng N 72:1317 D 31 '14

## Scrap metal

Classification of old metals. Foundry 43:312-13 Ag '15; Same. Metal Ind n s 13:143 Ap '15  
First principles of economy; handling railroad scrap. Ry R 56:443-5 Mr 27 '15  
Foundry use of non-ferrous scrap metals. F. M. Perkins. Il Metal Ind n s 13:140-2, 194-7 Ap-MY '15  
Handling and sale of car wheels, rails and scrap iron. J. P. Alexander. Elec Ry J 45:245-6 Ja 30 '15  
Manganese-bronze. J. B. Rhodes. Metal Ind n s 13:462 N '15  
Master blacksmiths' convention; discussion of reclaiming scrap. Ry Age (Mech ed) 89:473 S '15  
Modern reclamation plant and scrap yard. Ry R 57:281-4 Ag 28 '15  
New press for baling scrap metal. Il Iron Age 95:1059 My 13 '15  
Our big scrap heap. Foundry 43:232 Ja '15  
Philadelphia scrap prices, 1896 to 1914. Iron Age 95:742 Ap 1 '15  
Reclamation of scrap on the Great Northern. Il Ry Age 58:967-70 My 7 '15; Same. Ry Age (Mech ed) 89:305-8 Je '15  
Recovery of secondary metals. J. P. Dunlop. Metal Work 84:425-7 O 1 '15  
Recovery of secondary metals in 1914. Foundry 43:313-15 Ag '15  
Re-rolling rail steel. C. A. Tupper. Iron Age 96:471 Ag 26 '15  
Sale of scrap metals. B. J. Yungbluth. Elec Ry J 45:381 F 20 '15  
Sales of scrap metals. J. P. Alexander. Elec Ry J 45:192-3 Ja 23 '15  
Scrap and scrap classification: Railway storekeepers' association committee report. Ry Age 63:1089 My 21 '15; Same. Ry R 56:689-90 My 22 '15  
Scrap and scrap classification: Railway storekeepers' association committee report. Ry Age (Mech ed) 89:285 Je '15  
Scrap-handling plant of Boston & Albany railroad. Il Eng Rec 70:651-2 D 12 '14; Ry Age 58:745-6 Ap 2 '15  
Scrap prices at Chicago, 1903 to 1914. Iron Age 95:15 Ja 7 '15  
Standard old metal classification. Iron Age 94:1616-17 D 31 '14  
Welding up scrap nickel anodes. Il Elec R & W Elec'n 66:1210-11 Je 26 '15; Same. Eng & Min J 100:19 J1 3 '15; Same. Foundry 43:283-4 J1 '15; Same. Met & Chem Eng 13:453-4 J1 '15; Same cond. Iron Age 95:1392 Je 24 '15; Same abr. Metal Ind n s 13:297 J1 '15  
Where classifying scrap paid; Fort Wayne & Northern Indiana traction co.'s tests. A. W. Redderson. Elec Ry J 46:957-8 N 6 '15  
See also Metal waste; National scrap iron and steel association

## Scrapers

Bagley scraper for gravel mining in Alaska. L: H. Eddy. Il Eng & Min J 100:257-8 Ag 14 '15  
Power scraper for backfilling trenches. Il Eng & Contr 44:215-16 S 15 '15

## Screen doors

Screen door which sags. diags Bldg Age 37:53-4 Ag '15

## Screening

Handy grizzly for heavy work. K. C. Browne. diags Eng & Min J 98:1045 D 12 '14  
Portable screening plants for sand and gravel. Il Concrete Cem 5:263-4 D '14  
See also Sewage disposal—Screening

## Screens

Circulating water screens. H. Addison. diags Engineer 120:202 Ag 27 '15

Clarifying sewage by fine screens. K. Allen. Il diags Munic J 39:143-5, 186-8, 220-2 J1 29-Ag 12 '15

New travelling screens at Delray. C. F. Hirshfeld. Il diags Power 41:333-4 Mr 9 '15  
Notes on screens for gravel washing and screening. W. H. Wilms. diags Eng N 73:440-1 Mr 4 '15; Same cond. Il Eng 16:80-1 Ag '15

Power operated multi-basket strainer. Il Iron Age 96:1055-6 N 4 '15; Elec W 66:1103 N 13 '15

Revolving screens for sand, gravel and crushed stone. Il Concrete Cem 6:313-14 Je '15

Riensch-Wurl sewage screens, Brooklyn. Il Eng N 73:1224-5 Je 24 '15

Rotary screens remove macro-organisms from Denver's lake water supply. Il Eng Rec 72:291-2 S 4 '15

Sewage treatment in Germany by means of the Riensch-Wurl rotating screen. Endris. Il Eng & Contr 42:273-6 S 16 '14

Size of products from square and round hole screens. H. A. Roessler. Eng & Min J 99:493 Mr 13 '15

Specifications for uniform screens for soil tests. Eng N 73:267 F 11 '15

Steam shovel digs gravel for plant at Coleman, Ill. R. P. Duffy. Concrete Cem 7:170 N '15

Tests for screen selection. F. Melinke, Jr. Eng & Min J 100:763-4 N 6 '15

Travelling water screens. H: J. Edsall. Il Power 42:123-4 J1 27 '15

Wood screening machine. Il diags Eng & Min J 100:387-8 N 27 '15

## Screw driving machines

Machine for removing and driving screws. Il Iron Tr R 56:1115 Je 3 '15; Iron Age 95:1225 Je 3 '15

Special multiple screw driving machine. Il Iron Age 95:495 Mr 4 '15

## Screw machines

Automatic machine development. R. H. Flanders. Il Iron Tr R 57:885-98-4 N 4 '15; Abstract. Iron Age 96:1179 N 18 '15

Automatic shut-off on B. & S. automatic screw machine. E. Whitney. diags Mach 21:671 Ap '15

Britain six-spindle automatic screw machine. Il diags Mach 21:751-4 My '15; Iron Age 95:947-8 Ap 29 '15; Iron Tr R 56:919 My 6 '15

Cleveland model G automatic screw machine. Il diags Mach 21:419-21 Ja '15

Double-head automatic for finishing roller bearing rollers. Il diags Mach 21:965 Ag '15

Forming a wire in the automatic screw machine. E. Whitney. diags Mach 21:294-5 D '14

Hardening high speed screw machine tools. R. A. Millholland. Iron Age 96:745 S 30 '15

Index drilling and tapping attachment for Brown & Sharpe automatic screw machine. W. F. Gradolph. Il diags Mach 21:289-90 D '14

Machining castings in the automatic screw machine. E. Whitney. diags Mach 21:381-2 Ja '15

Making aero motor pistons: tool equipment used on Cleveland automatics. D. T. Hamilton. Il diags Mach 21:300-2 D '14

Making fuse parts on Brown & Sharpe automatic and hand screw machines. diags Mach 21:647-8 Ap '15

Perkins automatic screw machine. Il Mach 21:395 D '14

Reciprocating thread rolling machine. Il Iron Age 94:1283 D 3 '14

Simple magazine attachment. E. Whitney. diags Mach 21:312 Je '15

Simultaneous internal and external forming on screw machine. C. Lamoreaux. diags Mach 21:747-8 My '15

See also Machine tools

Screw propellers. See Propellers

Screw spikes. See Spikes (railroad)

## Screw threads

Conflict of one-half-inch thread pitches. J: A. Wood. Mach 22:148 O '15  
Pitch diameter of 90-degree threads. H. Smart. diags Mach 21:1011 Ag '15

**Screw threads—Continued**

Points on making and using threading chasers. *diags Mach 21:1015-16 Ag '15*  
 S. A. E. standard threads. *Mach 21:459 F '15*  
*See also* Pipe threads; Thread cutting machines

**Screws**

Fastening timber guard rails with lag screws. *diag Ry Age 59:125 J1 16 '15*  
 Modern plant for rolling iron: St. Louis screw co. H. C. Estep. *11 diags plans Iron Tr R 57:82-9+ J1 8 '15*  
 Tap and screw limits. *diags Mach 22:54-7 S '15*

*See also* Screw machines; Screw threads; Thread cutting machines

**Sea Call (yacht)**

Failure of the hull of the Sea Call. *11 Met & Chem Eng 18:884 D 1 '15*  
 Three-masted auxiliary schooner yacht Sea Call. *11 Sci Am 112:623 Je 26 '15*

Sea power. *See* Navies; Warships

**Sea shells**

Use of beach shells as concrete aggregate. *Concrete Cem 7:72-3 Ag '15*

**Sea walls**

Curbing the sea at Galveston. H. M. Robert. *11 Sci Am 113:268 S 25 '15*  
 Curved overhang suggested for Galveston seawall. E. L. Corthell. *Eng Rec 72:426 O 2 '15*  
 Design of shore-protection works. R. Bennett. *diags Eng N 74:98-101 J1 15 '15; Abstract Eng M 50:468-9 D '15*  
 Effect of Galveston storm on seawall and causeway. R. P. Babbitt. *Eng N 74:427 Ag 26 '15*  
 Frisco seawall at Cape Girardeau, Mo. *11 Ry Age 58:889-90 Ap 25 '15*  
 Galveston adopts plan to strengthen its waterfront defense against future storms. *11 diag Eng Rec 72:576-7 N 6 '15*  
 Galveston survives hurricane. *11 map Eng N 74:424-6 Ag 26 '15*  
 Galveston's sea-wall checks hurricane's devastation. E. B. Van de Greyn. *11 diags Eng Rec 72:271-5 Ag 28 '15*  
 Instance of the parabolic reflector reversed; Galveston sea wall as a sound reflector. L. F. J. Zerbee. *Sci Am 113:285 S 11 '15*  
 John B. Hawley confirms view that sea-wall saved Galveston. *Eng Rec 72:276 Ag 28 '15*  
 Storm damage to sea walls on California coast. *11 diags Eng N 73:720-1 Ap 15 '15*  
 Toronto breakwater to curb 10-foot waves. *diags Eng Rec 70:894-6 D 26 '14*

*See also* Bulkheads

**Sea water**

Irrigation with fresh water from the sea. E. J. Moynihan. *Sci Am S 79:84-5 F 6 '15*

**Seaboard air line**

Annual report. *map Ry Age 57:1171-2, 1209-10 D 25 '14*

Organizing the supply department on the Seaboard air line. H. C. Pearce. *Ry Age 58:45-7 Ja 8 '15*

**Seals**

Insoluble seal for letters. *Sci Am S 79:138 F 27 '15*

**Seamanship. See** Navigation**Seamen's bill**

Light on the seamen's bill. *Sci Am 113:58 J1 17 '15*

**Seamen's church institute, New York**

Plumbing system in Seamen's church institute. *11 Metal Work 83:412-14 Mr 19 '15*

**Searchlights**

Conditions determining the candle-power and steadiness of large current arcs for searchlights. H. Ayrton. *Illum Engr 8:78-81 F '15*

Constituent parts of a searchlight, testing etc. C. S. McDowell. *11 Am Inst E E Pro 34:195-208 F '15; Abstract and discussion. Elec R & W Elec'n 66:393 F 27 '15; Abstract and discussion. Elec W 66:526-7 F 27 '15; Discussion. Am Inst E E Pro 34:2975-83 D '15*

Electricity in marine work. M. W. Day. *11 Gen Elec R 18:509-11 Je '15*

Electricity in the war. *11 Elec R & W Elec'n 67:76-8 J1 10 '15*

Experimenting with searchlights. *Sci Am S 80:28 J1 10 '15*

Linemen's non-electric and electric searchlights. *11 Elec Ry J 45:472 Mr 6 '15*  
 Method for determining the range of searchlights. A. Blondel. *Illum Engr 8:86-90, 153-9 F, Ap '15*

Motor searchlights with the British-French forces. *11 Elec R & W Elec'n 67:239 Ag 7 '15*

New searchlight for use with dry cells. *11 Elec R & W Elec'n 67:209 J1 31 '15*

Portable searchlights for fire departments. L. C. Porter and P. S. Bailey. *11 Gen Elec R 18:1144-5 D '15*

Practical and theoretical notes on projectors. A. P. Trotter. *Illum Engr 8:82-4 F '15*

Searchlamp mounted on truck for British navy. *11 Elec W 66:1262 My 15 '15*

Searchlight automobile for the Italian army. *11 Sci Am 113:273+ S 25 '15*

Searchlight for the United States navy. H. T. Wade. *Sci Am 112:882 Ap 24 '15*

Searchlights and the visibility of distant objects. *Sci Am S 80:87 Ag 7 '15*

Searchlights; some notes on their scientific development and practical applications; with discussion. P. G. Ledger. *11 diag Illum Engr 8:53-76 F '15*

Searchlights; the more usual electrical systems of operation. J. F. Crowley. *Illum Engr 8:159-60 Ap '15*

Searchlights; their scientific development and practical applications. *Illum Engr 8:41-3 F '15*

Unusual lighting effects at night pageant. *11 Elec R & W Elec'n 67:832-4 Ag 21 '15*

Watching the enemy from the fighting line. *11 Sci Am S 80:83-9 Ag 7 '15*

**Searles Lake, California**

Searles Lake patent protest. *Eng & Min J 99:334-5 F 13 '15*

**Seashore**

Ripple marks; a study of water action on the seashore. C. Epry. *11 map Sci Am S 80:188-91 S 18 '15*

**Seaside resorts**

Collection and disposal of sewage at seaside resorts. M. A. Fugh. *11 diags Eng & Contr 43:175-9 F 24 '15*

**Seattle, Washington****Architecture**

L. C. Smith building, Seattle, Wash. *11 plan Arch & Bldg 46:471-5 D '14*

**Harbor**

Panama canal and the ports of the Pacific. A. J. Quigley. *11 map Eng M 48:811-16 Mr '15*

Port development at Seattle. P. P. Whitham. *11 diags map Eng N 73:476-81 Mr 11 '15*

**Lighting**

Seattle municipal lighting plant. W. L. Kidston. *11 plans Power 41:182-5 F 9 '15*

**Manufacturers' exhibit and exchange**

Seattle industrial exhibit. *11 Iron Age 96:194-5 J1 22 '15*

**Ordinances, etc.**

Ordinances regulating street excavating—replacement by city. *Munic Eng 48:116-18 F '15*

**Public works**

Sea water to rise into fresh-water canal. P. Whitham. *11 map Eng N 74:246-7 Ag 5 '15*

**Rapid transit**

Double trolley system in Seattle. H. J. Kennedy. *11 Elec Ry J 45:128-9 Ja 16 '15*

Municipal ownership in Seattle. *Elec Ry J 44:1311 D 12 '14*

New cars of Seattle municipal railway. H. J. Kennedy. *11 diag Elec Ry J 44:1284-8 D 12 '14*

**Sewerage**

Sewer gages and maximum flow in a Seattle outfall. H. D. Silliman. *map Eng N 74:882-4 O 28 '15*

## Seattle, Washington—Continued

## Water supply

Leakage from Cedar lake reservoir, Seattle water-supply. C. E. Fowler. II map plan Eng N 73:112-15 Ja 21 '15

Seawalls. See Sea walls

Secondary batteries. See Storage batteries

Secondary metals. See Scrap metal

Secret reserves. See Accounting

## Securities

Book accounts as security for loans. H. J. Buckley. Metal Work 83:237 F 5 '15

See also Bonds; Negotiable instruments; Railroads—Securities

## Seeds

Occurrence and significance of manganese in the seed coat of various seeds. J. S. McGargue. Am Chem Soc J 36:2532-6 D '14

Seed supply and the war. G. E. Mitchell. II Sci Am 111:488 D 12 '14

## Seepage

Evaporation and seepage from irrigation reservoirs. K. A. Heron. II Eng N 74:294-5 Ag 12 '15

How to express seepage losses from irrigation canals. S. Fortier. Eng N 73:1128-9 Je 10 '15

Losses in concrete and mortar lined canals. H. D. Newell. Eng Rec 72:21 J1 3 '15; Same abr. Eng & Contr 44:22 J1 7 '15

Seepage develops at Cedar river reservoir. Eng Rec 71:62 Ja 9 '15

Transmission losses in unlined irrigation channels. S. Fortier. Eng N 73:1060-3 Je 3 '15

## Selby smelter commission

Report of the Selby smelter commission. J Ind & Eng Chem 7:41-5 Ja '15; Same cond. Eng & Min J 98:1075-8 D 19 '14

## Selenium

Constructing selenium cells. Sci Am 112:201 F 27 '15

Construction of selenium cells. S. Wein. Sci Am 112:403 My 1 '15

Estimation of selenium in sulfur. W. Smith. J Ind & Eng Chem 7:849-50 O '15

Galvanic cell that reverses its polarity when illuminated. A. A. Campbell. Sci Am S 80:66 J1 31 '15

Mechanical eye bringing sight to the blind; a description of the crystal phonoticon. L. E. Dodd. II Sci Am 113:138-4 Ag 14 '15

Selenium cell making. Sci Am S 79:187 Mr 20 '15

Selenium in the production of colored glass. S. Wein. Sci Am 112:361 Ap 17 '15

## Sellers, Matthew Bacon

Sketch. por Eng M 50:200-1 N '15

## Selling. See Salesmen and salesmanship

## Selvages

Rolled selvages. Textile World 49:866-7 S '15

## Semaphores

Semaphore with automatic whistle to direct street traffic in San Francisco. II Elec Ry J 45:671 Ap 3 '15

## Semi-carbazide

Action of monochloroacetic acid on semi-carbazide and hydrazine. J. R. Bailey and W. T. Read. Am Chem Soc J 36:1747-66 Ag '14

## Septic tanks

Another septic-tank decision. Eng N 74:667 S 30 '15

Concrete septic tanks for country houses. diag Concrete Cem 6:sup91 Ap '15

Construction and operation of septic tank. W. H. Chapman. diag Metal Work 83:636-8-4 Ap 30 '15

Construction of concrete septic tanks. P. H. Wilson. diag Metal Work 82:768-4 D 11 '14

Design of sewage system for residences. D. W. Bingham. Metal Work 82:730 D 4 '14

Explosion in Pasadena septic tank. II Metal Work 84:464 O 8 '15

Septic tank and sewage disposal. B. J. Ashley. Metal Work 84:567 O 29 '15

Septic tank and sewage disposal. Metal Work 84:652-8 N 19 '15

Septic tank explosion at Florence. N. C. M. Maffitt. Eng N 73:410-11 F 25 '15

Septic tank for underground latrine. H. G. Pickard. diag Eng & Min J 99:149 Ja 16 '15

Sewage disposal by means of the septic tank. J. Graham. diag Dom Eng 73:198-200 N 13 '15

Sewage disposal by septic tank systems. W. H. Chapman. diag Dom Eng 71:94-6 Ap 24 '15

Sewage disposal for country homes. diag plans Bldg Age 37:63-5 S '15

Sewage disposal in rural country districts. B. D. Colby. Metal Work 84:341-3 S 10 '15

Sewage disposal methods in rural districts. diag Metal Work 83:672-5, 693-4-4 My 7-14 '15

Sewage disposal system for suburban home. E. D. Rich. diag Metal Work 84:644-6 N 19 '15

Theory and practice in sewage disposal; septic tank design and construction. D. W. Bingham. diag Metal Work 83:345-6-4 Mr 5 '15

Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diag Dom Eng 72:313-15, 338-40 S 11-18 '15

## Serbia. See Servia

## Serum therapy

Garden of serpents in the Serotherapeutic institute of Brazil. J. Boyer. II Sci Am 112:447 My 15 '15

New method of disinfecting wounds. Sci Am S 80:111 Ag 14 '15

## Servia

Present geographical position of Serbia. J. Cvijic. Sci Am 112:219 Mr 6 '15

## Settlers, Slag. See Slag settlers

## Settling ponds

Settling-pond sludge box. II Eng & Min J 98:1139 D 26 '14

## Sewage

Establishing and enforcing a British standard for sewage effluents. Eng N 72:1325 D 31 '14

Sewer construction in Chicago, Ill., with a ladder type excavator. S. E. Bates. II Munic Eng 49:193-5 N '15

Waste greases from sewage. Metal Work 84:236 Ag 20 '15

See also Sewage aeration; Sewage disposal; Sewage flow; Sewage pumping; Sewage sampling; Sewage sludge; Sewage tanks; Sewer pipes; Sewerage; Water pollution

## Testing

Analytical methods for the control of sewage-treatment works. Eng N 73:84-5 Ja 14 '15

Brooklyn sewage-aeration and activated-sludge experiments. E. J. Fort. II diag Eng N 74:314-17 J1 29 '15

Comparison of methods for determining putrescibility or oxygen demand. F. E. Hale and T. W. Melia. J Ind & Eng Chem 7:760-4 S '15

Decatur, Ill. installs plant for sewage tests. II Eng Rec 71:495-6 Ap 17 '15

Determination of the biochemical oxygen demand by the saltpeter method in stock-yards, tannery and corn products wastes. A. Lederer. J Ind & Eng Chem 7:514-16 Je '15

Electrolytic sewage treatment. Elmhurst, Borough of Queens, New York city. Munic J 39:551-4 O 7 '15

Electrolytic sewage treatment plant at Durant, Oklahoma. W. L. Benham. II diag Munic Eng 49:141-6 O '15

Operation of sewage disposal plants. F. E. Daniels. Munic J 37:553, 735-8, 879-80 O 15, N 18, D 17 '14

Recommended tests for use in laboratory control of sewage works operation. Eng & Contr 43:3-4 Ja 6 '15

Sewage works operation: report of a committee of the American public health association. Munic J 37:882-3 D 17 '14

Tests controlling sewage plant operation. Eng Rec 70:674-5 D 19 '14

## Sewage aeration

Activated sludge and the Baltimore sewage experiments. G. J. Requardt. diag Eng Rec 72:23 J1 3 '15

Activated sludge and the Baltimore sewage experiments. O. J. Wilkinson. Eng Rec 72:640 N 20 '15

**Sewage aeration—Continued**

- Activated sludge and the Baltimore sewage experiments. W. S. Coulter. *diag Eng Rec* 71: 784 Je 19 '15
- Activated-sludge experiments at Milwaukee. Wis. T. C. Hatton. *diags Eng N* 74:134-7 JI 15 '15
- Activated-sludge experiments at Urbana, Ill. *Eng N* 74:1096-7 D 2 '15
- Activated sludge experiments in Canada. R. O. Wynne-Roberts. *Munic Eng* 49:68-9 Ag '15
- Activated sludge in America: an editorial survey. M. N. Baker. *il diag Eng N* 74:164-71 JI 22 '15; *Abstract. Eng M* 49:931-3 S '15
- Activated sludge sewage disposal. *il Munic J* 38:504-5 Ap 15 '15
- British engineer submits an activated-sludge query. O. J. Wilkinson. *Eng N* 74:948 N 11 '15
- Brooklyn sewage-aeration and activated-sludge experiments. E. J. Fort. *il diag Eng N* 74: 214-17 JI 29 '15
- Choosing air compressors for activated-sludge tanks. C. H. Nordell. *Eng N* 74:904-6 N 4 '15
- Co-operation sought in conducting activated sludge experiments at Baltimore. L. C. Frank and C. W. Hendrick. *diag Eng Rec* 71:521-2 Ap 24 '15
- English experiments on sewage aeration reviewed as preliminary to Baltimore tests. L. C. Frank. *Eng Rec* 71:288-9 Mr 6 '15
- Purification of sewage by aeration in the presence of activated sludge. E. Bartow and F. W. Mohlman. *J Ind & Eng Chem* 7:313-20 Ap '15; *Same. il Eng & Contr* 43:310-11 Ap 7 '15; *Same. Eng N* 73:647-8 Ap 1 '15; *Same. Eng Rec* 71:421-2 Ap 3 '15
- Sewage aeration at Lawrence and Manchester compared. H. W. Clark. *Eng Rec* 71:367-8 Mr 20 '15
- Treatment of sewage by aeration in the presence of activated sludge. E. Bartow. *il Met & Chem Eng* 13:901-4 D 1 '15
- World's first full-scale plant for the treatment of sewage by the activated sludge process, Milwaukee, Wis. T. C. Hatton. *diags plan Eng & Contr* 44:323-2 O 27 '15; *Same cond. Eng Rec* 72:481-4 O 16 '15; *Abstract. Munic J* 39:776-7 N 18 '15
- Sewage disposal**
- Additions to the Baltimore sewage-works. *il diag Eng N* 74:278-9 Ag 5 '15
- Advances in sewage disposal. G. W. Fuller. *Eng Rec* 71:10-11 Ja 2 '15
- Akron is building sewage and garbage disposal plants. *plan Eng Rec* 71:63 Ja 9 '15
- Albany sewage-disposal works. J. R. Gregory. *plans Eng N* 74:692-5 O 7 '15
- Albany's sewage treatment plant; sixteen Imhoff tanks and eight sludge beds. *il diags Munic J* 38:837-40 Je 17 '15
- Chicago should no longer depend on sewage dilution. *Eng Rec* 72:394 S 26 '15
- Collection and disposal of sewage at seaside resorts. M. A. Pugh. *il diags Eng & Contr* 43:175-9 F 24 '15
- Collection and treatment of sewage in Philadelphia. *Eng & Contr* 42:205-7 Ag 26 '14
- Collection and treatment of sewage in their relation to the city of Philadelphia. G. S. Webster. *Boston Soc C E J* 1:277-89 My '14
- Committee outlines best methods for sewage works operation. *Eng Rec* 72:316-17 S 11 '15
- Construction and operation of Gloversville sewage works. H. P. Luddy and H. J. Hammer. *il diags plan Eng N* 74:744-7, 780-1 O 14-21 '15
- Converting old septic tank and contact beds into two-story tank and sprinkling filters at Moorestown, N. J. A. Potter. *il plans Eng & Contr* 42:473-6 N 18 '14
- Data and discussion on the handling of sewage sludge. *Eng & Contr* 43:4-5 Ja 6 '15
- Degree of purification desirable and practicable in sewage treatment plants in Iowa. L. Higgins. *Eng & Contr* 43:479-80 My 26 '15
- Design, cost and operation of new sewage treatment plant at the state hospital, Warren, Pa. P. E. Mebus and F. R. Berlin. *plans Eng & Contr* 43:265-8 Mr 24 '15
- Design of sewage systems for residences. D. W. Bingham. *Metal Work* 82:730 D 4 '14
- Design of two residential sewage treatment plants, including settling tanks of Imhoff type. S. A. Greeley. *il diags plans Eng & Contr* 42:565-7 D 16 '14
- Disposal of Greater New York's sewage; general plans. C. E. Gregory. *Munic J* 39: 693-4 N 4 '15
- Experience in Germany with combined sedimentation and digestion tanks and separate sludge digestion tanks. K. Thumm and E. C. Reiche. *Eng & Contr* 42:389-42 O 7 '14; *Same cond. (Preliminary report on Emscher tanks and kindred sewage-clarification processes). Eng N* 72:1206-8 D 31 '14
- Future sanitary problem of Chicago; symposium. W. Soc E J 19:757-76 O '14
- Handling of sewage sludge; abstracts. G. S. Webster. *Am Soc M E J* 37:96-7 F '15; *Munic J* 38:222-4 F 18 '15; *Discussion. Am Soc M E J* 37:297-8 F '15
- Imhoff tanks and sprinklers for sewage of Brighton district, Rochester, New York. *diags plan Eng Rec* 71:679-82 My 29 '15
- Inoffensive sewage disposal. R. Hering. *plan diags Munic Eng* 43:127-9 F '15
- Low river flow exacting for Columbus sewage works. *Eng Rec* 71:492 Ap 17 '15
- Main drainage works proposed for New York. G. A. Soper. *il maps Boston Soc C E J* 1:31-66 F '14
- Maintenance of sewers and disposal works demands treatment of injurious trade wastes. W. L. Stevenson. *Eng Rec* 71:256-60 F 27 '15
- Making over a small sewage-treatment plant at Morristown, N. J. *il diag Eng N* 73:203-9 F 4 '15
- Marysville, Ohio, sewage-treatment plant; screening, two-story sedimentation tanks, crushed-stone contact beds and intermittent sand filters. E. D. Barstow. *Eng Rec* 72:686-7 N 20 '15
- Ninth and final reports of the Royal commission on sewage disposal of Great Britain. *Eng & Contr* 43:473-9 My 26 '15
- Observations of some European water purification and sewage disposal plants. E. Bartow. *il Am Water Works Assn J* 2:13-24 Mr '15
- Operating records of Atlanta sewage treatment plant show adequate degree of purification. C. C. Hommon. *il Eng Rec* 72:4-7 JI 3 '15
- Operating sewage disposal plants. *Munic J* 38: 66 Ja 21 '15
- Operation of sewage disposal plants. F. E. Daniels. *il Munic J* 36:87-71, 337-40, 389-92, 529-33, 733-6, 885-8; 37:87-9, 235-8, 386-8, 553-3, 735-8, 879-82 Ja 15, F 19, Mr 19, Ap 16, My 21, Je 18, JI 16, Ag 20, S 17, O 15, N 19, D 17 '14
- Operation of the Plainfield sewage-works. J. R. Downes. *Eng N* 73:234-5 F 4 '15
- Ornamental plants on sewage bed, Harrison, N. Y. A. Potter. *il Eng N* 74:412 Ag 26 '15
- Philadelphia sewage report. *Eng N* 73:1051-2 My 27 '15
- Philadelphia's sewage disposal problem. W. L. Stevenson. *il Metal Work* 83:728-9 My 21 '15
- Placing a neglected sewage treatment plant in successful operation at Monticello, Arkansas. G. A. Watkins. *il plan Eng & Contr* 43: 247-8 Mr 17 '15
- Plumbing installation and sewage disposal. C. A. Whittemore. *Brickb* 24:115-18, 137-40, 171-3 My-JI '15
- Probable future of various sewage treatment methods. G. W. Fuller. *Eng & Contr* 42:204-5 Ag 26 '14
- Processes available for the treatment of industrial wastes. *Eng & Contr* 43:363-5 Ap 21 '15
- Recommend filtering Chicago water and progressive disposal of sewage. G. A. Soper, J. D. Watson and A. J. Martin. *Eng Rec* 71:709 Je 5 '15
- Recommended general procedure in sewage works operation. *plan Eng & Contr* 42:567-8 D 16 '14
- Reject untried sewage treatment methods for Decatur, Ill. L. Pearce and S. A. Greeley. *Eng Rec* 71:775-6 Je 19 '15
- Remodeling of septic tanks into Imhoff tanks eliminates odors from land irrigation. *il diags plan Eng Rec* 71:747-8 Je 12 '15
- Royal commission on sewage disposal. *Engineer* 119:378-9 Ap 16 '15
- Sanitary engineering in 1914. *Engineer* 119:31-2, 55-6 Ja 8-15 '15



**Sewage disposal—Continued**

- Schenectady's sewage disposal plant; nine shallow Imhoff tanks and three acres of sprinkling filters. *Il plans Munic J 38:499-504 Ap 15 '15*
- Sewage disposal at Baltimore water purification plant. J. W. Armstrong. *Il diag plan Munic J 39:261-2 Ag 19 '15*
- Sewage disposal at Bloomington; abstract. U. S. Hanna. *Munic J 37:883-4 D 17 '14*
- Sewage disposal at Lethbridge, Alberta. A. C. D. Blanchard. *Munic Eng 48:217-20 Mr '15*
- Sewage disposal by septic tank systems. W. H. Chapman. *diags Dom Eng 71:94-6 Ap 24 '15*
- Sewage disposal in Chilliwack. B. C. D. F. Dunn. *diags Munic J 38:687-9 My 20 '15*
- Sewage disposal in Maryland; advantages of joint sewerage and sewage treatment systems for small towns. *Munic J 38:842-4 Je 17 '15*
- Sewage disposal plant at Aberdeen, South Dakota; with discussion. W. G. Potter. *Il plans W Soc E J 19:782-805, pl 1-8 O '14; Same. Eng & Contr 43:37-8 Ja 13 '15; Same cond. Metal Work 84:214-17 Ag 13 '15*
- Sewage disposal plant for Akron. *Il diags plan Munic J 39:71-4, 112-14 Jl 15-22 '15*
- Sewage disposal system for private house. G. E. Watkins. *diags Metal Work 83:381-2 Mr 12 '15*
- Sewage disposal without odor. R. Hering. *Munic Eng 48:181-5 Mr '15*
- Sewage disposal works at Fitchburg, Mass. D. A. Hartwell. *Il fold maps: Boston Soc C E J 2:203-22 Je '15; Excerpt (Costs of the Fitchburg sewage treatment works) Eng & Contr 42:566 Je 23 '15*
- Sewage disposal works at Leeds. *maps Engineer 118:501-2 N 27 '14*
- Sewage purifying plant at Ostend. *Sci Am 112: 50 Ja 9 '15*
- Sewage-treatment and garbage-reduction works for Akron, Ohio. *Eng N 78:147 Ja 28 '15*
- Sewage-treatment plant at Calvert, Tex. T. L. Fountain. *Il diags plan Eng N 78:930-4 My 13 '15*
- Sewage treatment plant for a small sanatorium. R. F. MacDowell. *Il diags Eng N 73: 1014-16 My 27 '15*
- Sewage treatment; report of committee of American public health association. *Il Munic J 38:7-10 Ja 7 '15*
- Sewage-works of Marysville, Ohio. *diags Eng N 73:484 Mr 11 '15*
- Sewage-works operation. *Eng N 78:110 Ja 21 '15*
- Sewage works operation. *Munic J 39:434 S 16 '15*
- Small sewage treatment plant: Home for the indigent of Delaware county, Pa. P. E. Mebus and F. R. Berlin. *Il diag plan Munic J 37:877-9 D 17 '14*
- Steam disinfection for sewage on common carriers. *diag Eng Rec 71:43 Ja 9 '15; Same (Sewage treatment on trains and boats). Eng M 48:917-18 Mr '15*
- Suggestions on the operation of small sewage treatment plants. *Eng & Contr 43:82-3 Ja 27 '15*
- Theory and practice in sewage disposal; septic tank design and construction. D. W. Bingham. *diag Metal Work 83:345-6+ Mr 5 '15*
- Three districts for disposal of Cleveland's sewage. R. W. Pratt. *Eng Rec 71:422 Ap 8 '15*
- Two years' tests indicate best treatment for Chicago stock yards wastes. *Il Eng Rec 71:266-8 F 27 '15*
- West End sewage-treatment works, Hamilton, Ont. B. E. T. Ellis. *diags plans Eng N 78:424-8 Mr 4 '15*
- World's first full-scale plant for the treatment of sewage by the activated sludge process. Milwaukee, Wis. T. C. Hatton. *diags plan Eng & Contr 44:322-7 O 27 '15; Same cond. Eng Rec 72:451-4 O 16 '15; Abstract. Munic J 39:776-7 N 18 '15*
- See also Imhoff tanks; Plumbing; Refuse and refuse disposal; Septic tanks; Sewage—Testing; Sewage aeration; Sewage irrigation; Sewage pumping; Sewage tanks; Sewerage; Water pollution; Water purification*

**Disinfection**

- Automatic device controls hypochlorite application. E. E. Ludwick. *diags Eng Rec 72: 103-4 Jl 24 '15*

**Electrolytic treatment**

- Electrolytic method of sewage disposal. J. C. Olsen. *Il Met & Chem Eng 13:735-9, 793-7 O 15-N 1 '15*
- Electrolytic sewage treatment. Elmhurst, Borough of Queens, New York city. *Munic J 39:551-4 O 7 '15*
- Electrolytic sewage treatment plant at Durant, Oklahoma. W. L. Benham. *Il diags Munic Eng 49:141-6 O '15*

**Experiments**

- Activated-sludge experiments at Urbana, Ill. *Eng N 74:1096-7 D 2 '15*
- Activated sludge in America: an editorial survey. M. N. Baker. *Il diag Eng N 74:164-71 Jl 22 '15; Abstract. Eng M 49:931-3 S '15*
- Activated sludge sewage disposal. *Il Munic J 38:504-5 Ap 15 '15*
- Co-operation sought in conducting activated sludge experiments at Baltimore. L. C. Frank and C. W. Hendrick. *diag Eng Rec 71:521-2 Ap 24 '15*
- Design of the sewage treatment experimental plant at Brooklyn, N. Y. G. T. Hammond. *Eng & Contr 42:527-30 D 2 '14; Same cond. Munic Eng 47:437-36 D '14*
- English experiments on sewage aeration reviewed as preliminary to Baltimore tests. L. C. Frank. *Eng Rec 71:288-9 Mr 6 '15*
- Milwaukee sewerage problem and the sewage treatment testing station. T. C. Hatton. *Eng & Contr 42:368-9 O 14 '14*
- Purification of sewage by aeration in the presence of activated sludge. E. Bartow and F. W. Mohlman. *J Ind & Eng Chem 7:318-20 Ap '15; Same. Il Eng & Contr 43:310-11 Ap 7 '15; Same. Eng N 73:647-8 Ap 1 '15; Same. Eng Rec 71:421-2 Ap 3 '15*
- Sewage aeration at Lawrence and Manchester compared. H. W. Clark. *Eng Rec 71:367-8 Mr 20 '15*
- Treatment of sewage by aeration in the presence of activated sludge. E. Bartow. *Il Met & Chem Eng 13:901-4 D 1 '15*

**Filtration**

- Algae growths cover Atlanta sewage filters. C. C. Hommon. *Il Eng Rec 72:335 S 11 '15*
- Concrete blocks cover sewerage filter underdrains. *Il Eng Rec 71:383 Mr 13 '15*
- Constructing the Fitchburg sewage-works. F. A. Marston. *Il diags Eng N 74:4-6 Jl 1 '15*
- Design feature of new sewerage system and sewage disposal works for Cleburne, Texas. R. E. McDonnell. *diags plans Eng & Contr 44:72-5 Jl 28 '15*
- Economics of sewage filters. G. W. Fuller. *Eng & Contr 42:369-71 O 14 '14*
- Economy of deep sewage filters explained on basis of "held" water and hydraulics. H. W. Clark. *Eng Rec 72:477-8 O 16 '15*
- Method of adjusting sewage sprinklers. A. T. Nabstedt. *diag Eng N 74:219-20 Jl 29 '15*
- Sewage-works of Morristown. N. J. C. Potts. *Il diags plan Eng N 73:1105-8 Je 10 '15*
- Typical Iowa sewage treatment plant and its proper operation. *Eng & Contr 44:6-7 Jl 7 '15*
- Variable-capacity hotel sewage-treatment plant. G. L. Robinson. *Il plan Eng N 74:346-7 Ag 19 '15*

**Regulation**

- State control of sewage-treatment works. *Eng N 74:591-3 S 28 '15*

**Screening**

- Adoption of fine screening at Daytona, Fla. *Eng & Contr 43:5-6 Ja 6 '15*
- Clarifying sewage by fine screens. K. Allen. *Il diags Munic J 39:143-5, 186-8, 220-2 Jl 29-Ag 12 '15*
- Fine screening adopted in preference to sedimentation and separate sludge digestion, on cost basis, at Brooklyn. *diag Eng & Contr 44:7 Jl 7 '15*
- Riensch-Wurl sewage screens, Brooklyn. *Il Eng N 73:1224-5 Je 24 '15*

**Sewage disposal—Screening—Continued**

Sewage pumping, screening and sterilizing station at Daytona, Fla.; specifications. plans Eng & Contr 42:525-7 D 2 '14  
 Sewage screening at Daytona, Fla. Munic J 37:884 D 17 '14  
 Sewage treatment in Germany by means of the Riensch-Wurl rotating screen. Endris. 11 Eng & Contr 42:273-8 S 16 '14

**Sewage disposal, Rural**

City sewers for country homes. plan Dom Eng 72:351 S 18 '15  
 Sewage disposal for country homes. diag plans Bldg Age 37:63-5 S; 65-7 O '15  
 Sewage disposal in rural country districts. E. D. Colby. Metal Work 84:341-3 S 10 '15  
 Sewage disposal methods in country places. T. Horton. diag Metal Work 84:679-81 N 26 '15

Sewage disposal methods in rural districts. diag Metal Work 83:672-5, 693-4+ My 7-14 '15

Sewage disposal system for suburban home. E. D. Rich. diag Metal Work 84:644-6 N 10 '15

Three residential sewage-treatment plants near Cleveland. R. F. MacDowell. Eng N 74: 56-7 JI 8 '15; Abstract. Concrete Cem 7:81 Ag '15

Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diag Dom Eng 72:313-15, 338-40 S 11-18 '15

**Sewage ejectors**

Beggs electrically controlled automatic sewage ejector system. plan Eng & Contr 43:524 Je 9 '15; Eng Rec 71:699 My 29 '15; Power 42: 43 JI 13 '15  
 Efficiency test of a Shone ejector plant. C. S. Moore. diag Eng & Contr 43:564-5 Je 23 '15; Same. Munic J 39:76-8 JI 15 '15

Sewage farms. See Sewage irrigation

**Sewage flow**

Automatic sewage-pumping and metering station, Providence, R. I. A. A. Wood. 11 plans Eng N 74:293-4 Ag 12 '15  
 Devices for measuring the flow of sewage. E. Wright, Jr., and others. 11 diag Boston Soc C E J 1:439-54 O '14; Same. Eng & Contr 43:508-11 Je 9 '15

Dye for measuring sewage flow. F. E. Daniels. Munic J 39:550-1 O 7 '15

Method and results of making sewage gagings at Berkeley, Calif. T. A. Bither. plan Eng & Contr 43:505-6 Je 23 '15

Run-off from sewer areas; final report of committee. bibliog 11 diag Boston Soc C E J 1:291-322 Je '14; Abstract. Munic J 37:73-4 JI 16 '14

Sewage measurement and automatic control of storm overflow at Pawtucket, R. I. G. A. Carpenter. 11 diag Boston Soc C E J 1:419-27 O '14

Sewer gaging at Seattle in the light of St. Louis gagings. W. V. Horner; H. D. Silliman. Eng N 74:1091-3 D 2 '15

Sewer gagings and maximum flow in a Seattle outfall. H. D. Silliman. map Eng N 74: 832-4 O 28 '15

Simple and efficient recording gage for weir measurements. D. E. Adams and E. I. Roberts. 11 diag Eng N 73:1135-6 Je 10 '15

Simple and efficient recording gage for weir measurements. 11 diag Eng N 73:829-31 Ap 29 '15

Venturi meter for sewage measurement. C. G. Richardson. 11 diag Boston Soc C E J 1:429-37 O '14

**Sewage irrigation**

How the city of Nottingham, England, solved its sewage disposal problem. C. M. Hitch. Dom Eng 72:377-8 S 25 '15; Same. Metal Work 84:399 S 24 '15

Sewage disposal at a profit in Nottingham, England. Sci Am 113:442 N 20 '15

**Sewage pumping**

Automatic sewage-pumping and metering station, Providence, R. I. A. A. Wood. 11 plans Eng N 74:293-4 Ag 12 '15

Baltimore sewage-pumping plant. W. O. Rogers. 11 Power 41:76-8 Ja 19 '15

Boston's new sewage pumping station. W. B. Conant. 11 Munic J 39:775-6 N 18 '15

Constructing Passaic valley pumping station. 11 plan Munic J 38:341-4 Mr 18 '15

Constructing pumping station in unbraced cofferdam formed by outside walls. 11 plans Eng Rec 71:292-4 Mr 6 '15

Fairview sewage-pumping station. T. Wilson. 11 plan Power 41:386-7 Mr 2 '15

First section of Sacramento trunk sewer completed. Eng Rec 71:461 Ap 10 '15

Sewage collection and pumping systems on low-lying Park Point near Duluth, Minn. diag Eng & Contr 43:309-10 Ap 7 '15

Sewage pumping plants; brief descriptions of plants operating in seventy-five cities. Munic J 38:358-62 Mr 18 '15

See also Sewage ejectors

Sewage purification. See Sewage disposal

**Sewage sampling**

Obtaining samples of sewage and sewage liquids for testing. G. B. Kershaw. Eng & Contr 42:342-4 O 7 '14

Sampling at experimental sewage treatment plant at Chicago stockyards. Eng & Contr 43:83 Ja 27 '15

**Sewage sludge**

Can sewage sludge be made valuable as a fertilizer? Eng N 73:593 Mr 25 '15

Co-operation sought in conducting activated sludge experiments at Baltimore. L. C. Frank and C. W. Hendrick. diag Eng Rec 71:521-2 Ap 24 '15

Data and discussion on the handling of sewage sludge. Eng & Contr 43:4-5 Ja 6 '15

Drying of sludge and its further use; abstract. H. Hermanns. diag Am Soc M E J 37:51-2 Ja '15

Experience in Germany with combined sedimentation and digestion tanks and separate sludge digestion tanks. K. Thumm and E. C. Reichle. Eng & Contr 42:333-42 O 7 '14; Same cond. (Preliminary report on Emscher tanks and kindred sewage-clarification processes). Eng N 72:13:6-8 D 31 '14

Handling of sewage sludge; abstracts. G. S. Webster. Am Soc M E J 37:95-7 F '15; Munic J 38:222-4 F 18 '15; Discussion. Am Soc M E J 37:97-8 F '15

Measuring the drainability of Emscher tank sludge. W. L. Stevenson. 11 Eng & Contr 44: 312 S 15 '15; Same. Munic J 39:427-8 S 16 '15; Same cond. Eng N 74:566 S 16 '15

Saving the grease in sewage. Sci Am 113:305 S 4 '15

Sewage disposal without odor. R. Hering. Munic Eng 43:181-5 Mr '15

Treatment of sewage by aeration in the presence of activated sludge. E. Bartow. 11 Met & Chem Eng 13:901-4 D 1 '15

See also Sewage aeration; Sewage disposal

**Sewage tanks**

Sewage-intercepting chamber and settling tank for the Illinois state training school for girls, at Geneva, Ill. diag Eng N 72:1202-3 D 17 '14

Variable-capacity hotel sewage-treatment plant. G. L. Robinson. 11 plan Eng N 74:346-7 Ag 19 '15

See also Emscher tanks; Imhoff tanks; Septic tanks

Sewage testing. See Sewage—Testing

**Sewer air**

Investigation of sewer air following Boston explosion. H. W. Clark. Eng Rec 70:606-7 D 5 '14

**Sewer cleaning**

New sewer-cleaning machine. 11 Eng N 73: 591-2 Mr 25 '15

Preventing and removing dirt in sewers. Munic J 38:68 Ja 21 '15

Sewers cleaned with scrapers to pass hall test. C. A. Bryan. 11 Eng Rec 70:698-9 D 26 '14

Water power sewer cleaning device. 11 Eng & Contr 44:152 Ag 25 '15

**Sewer design**

Circular sewers versus egg-shaped, catenary and horseshoe cross-sections. R. D. French. Eng Rec 72:222-3 Ag 21 '15

Comparing sewer sections. B. Brooks; R. S. Beard. 29 diag Eng Rec 72:608-10 N 13 '15

**Sewer design—Continued**

- Design features of new sewerage works at Edmonton, Alberta. *diags plans Eng & Contr* 43:400-1 My 5 '15
- Design of regulators and storm water overflows for sewers for Cincinnati. H. J. Miner. *diags Eng & Contr* 42:156-7 Ag 12 '14
- Design of the sewerage system for the Panama-Pacific international exposition. W. C. Willard. *diags plan Eng & Contr* 42:434-40 N 4 '14
- Graphic method of determining runoff in storm sewers; discussion. *Eng N* 72:1322-5 D 31 '14
- Graphic method of determining runoff to sewers. C. H. Nordell; O. Hufeland. *Eng N* 73:893-4 Ap 8 '15
- New sewer inlets at St. Louis. S. Chivvis. *il diags Eng N* 74:652-3 S 8 '15
- Storm water inlets; information concerning dimensions and construction of inlet openings, inlets and catch basins in several hundred cities. *diags Munic J* 38:690-4 My 20 '15
- Sewer explosions**
- Apparatus for testing sewer atmosphere for explosive gases. H. J. Kellogg. *diag Eng & Contr* 42:273 S 16 '14
- Following explosion, Boston sewer tests show no gasoline. *Eng Rec* 71:457-8 Ap 10 '15
- Inflammable wastes in sewers. N. S. Sprague. *diags Munic Eng* 47:336-43 N '14; Same. *Eng & Contr* 42:476-8 N 18 '14; Excerpt. *Eng Rec* 70:442-3 O 17 '14
- Quantity of gasoline necessary to produce explosive mixtures in sewers. G. A. Burrell and H. T. Boyd. *diags J Ind & Eng Chem* 7:750-4 S '15; Abstract. *Eng N* 74:955 N 11 '15
- Sewer explosion at East Boston pumping station. *Munic Eng* 48:45-6 Ja '15
- Valid reasons for plumbing ordinances and plumbing inspection. T. J. Claffy. *Dom Eng* 73:235-7 N 20 '15
- Sewer gas**
- Sewer gas and its relation to public health; further discussion. A. R. McGonegal; A. Bateman. *Metal Work* 82:831-2 D 25 '14
- Valid reasons for plumbing ordinances and plumbing inspection. T. J. Claffy. *Dom Eng* 73:235-7 N 20 '15
- Sewer pipes**
- Cast iron pipe vs. vitrified stone-ware pipe for house sewers. W. R. Marshall. *il Dom Eng* 71:310 Je 12 '15
- Constructing an outfall sewer at Canton, Ohio. *il Eng N* 74:264-5 Ag 5 '15
- Load tests of concrete pipe in Savannah. H. R. Conant. *il Eng N* 74:556-7 S 16 '15
- Manufacture of concrete sewer pipe. *il Metal Work* 82:833-4 D 25 '14
- Manufacturing and laying reinforced concrete sewer pipe at Philadelphia. *il Eng & Contr* 43:245-7 Mr 17 '15
- Tests of circular and egg-shaped reinforced concrete sewer pipes. A. T. Goldbeck. *il diags Eng & Contr* 43:307-9 Ap 7 '15; Same (Reinforced-concrete sewer pipe tested for stiffness and impermeability). *Eng Rec* 71:711-12 Je 5 '15; Same, with table. *Concrete Cem* 6:232-5 My '15
- Sewerage**
- Adapted machinery and construction methods employed on new Western avenue sewer, Chicago—time studies. S. E. Bates. *il diag Eng & Contr* 44:283-5 O 13 '15
- Albany's sewage treatment plant; sixteen Imhoff tanks and eight sludge beds. *il diags Munic J* 38:837-40 Je 17 '15
- Beargrass Creek storm-water channel at Louisville, Ky. J. H. Kimball. *il diag plan Eng N* 72:1256-60 D 24 '14
- Beat scheduled time five months in building huge De la Brea sewer, Los Angeles. *il Eng Rec* 72:130-2 Jl 31 '15
- Collapsible form for sewers. *diags Eng N* 73:494 Mr 11 '15
- Collection and disposal of sewage at seaside resorts. M. A. Pugh. *il diags Eng & Contr* 43:176-9 F 24 '15
- Collection and treatment of sewage in Philadelphia. *Eng & Contr* 42:205-7 Ag 26 '14
- Construction of a 6-ft. segmental-block sewer. B: Wilk. *il Eng N* 73:838-9 Ap 29 '15
- Construction of the Metcalf ave. sewer, borough of the Bronx, New York city. G. L. Christian. *il diags Eng N* 72:1164-7 D 10 '14
- Contract plans for sewer work at Columbus, Ohio. *Eng N* 74:1034-5 N 25 '15
- Design and construction of the Market street flood channel, Burlington, Ia. C. T. Bowen. *Eng & Contr* 43:129-30 F 10 '15
- Design, construction and cost of new sanitary sewer system at Carrollton, Ill. M. C. Poulsen. *il Eng & Contr* 43:507-8 Je 9 '15
- Design, construction and cost of new sanitary sewerage system at Alton, Ill. J. E. Schwaab. *Eng & Contr* 43:137-8 F 10 '15
- Design, construction and operation of Lethbridge, Alberta, sewage treatment works. *plan Eng & Contr* 43:401-3 My 5 '15
- Diagram for computing rock in sewer trenches. C. A. Bryan. *Eng N* 73:1081-2 Je 8 '15
- Excavating and backfilling sewer trenches by machine. *Eng Rec* 71:20-1 Ja 2 '15
- Fall River mills will benefit by \$3,000,000 water and sewerage project. *diag Eng Rec* 72:501-3 O 23 '15
- Making over a storm sewer at Lincoln, Neb. G: W. Bates. *il diag Eng N* 73:710-11 Ap 15 '15
- Method and cost of constructing an inverted sewer siphon of 12 in. cast iron pipe, encased in concrete, beneath small stream at Carlisle, Pa. C. A. Bryan. *diag Eng & Contr* 42:151-3 Ag 12 '14
- Method and cost of making a relocation survey of underground pipe lines. O. E. Carr. *plans Eng & Contr* 42:153-5 Ag 12 '14; Same cond. (Underground survey of Cincinnati). *Eng Rec* 71:38-40 Ja 9 '15
- Method and cost of making house connections to the New Orleans sewerage system. *Eng & Contr* 42:203-4 Ag 26 '14
- Milwaukee sewerage problem and the sewage treatment testing station. T. C. Hatton. *Eng & Contr* 42:367-9 O 14 '14
- New sewerage system of Cairo, Egypt. *diags Eng N* 74:545 S 16 '15
- New water-conservation scheme at Fall River, Mass. *diag Eng N* 74:760-1 O 14 '13
- 90-in. circular gate for a 120-ft. head. *il diags Eng N* 73:865 My 6 '15
- Philadelphia sewage treatment report. *Munic J* 38:840-2 Je 17 '15
- Philadelphia's sewerage report; editorial comment. *Munic J* 39:257-9 Ag 19 '15
- Proposed method of enclosing a stream in reinforced concrete conduit through Mansfield, Ohio. C. L. Bushey. *diag Eng & Contr* 43:126-7 F 10 '15
- Recommended procedure in disposal of wastes from the stockyards and Packingtown in Chicago. *Eng & Contr* 43:38-9 Ja 13 '15
- Reinforced-concrete sewer viaduct. E. D. Gilman. *il diag Eng N* 73:1191 Je 17 '15
- San Francisco's sewerage system. A. J. Cleary. *il diags maps Eng N* 73:305-10 F 13 '15
- Scope of engineering reports and plans for sewerage and sewage disposal works in Saskatchewan. *Eng & Contr* 42:155-8 Ag 12 '14
- 7000-foot pipe line floated to place in Lake Ontario in long sections. N. A. Brown. *il diags Eng Rec* 72:20-1 Jl 3 '15
- Sewage collection and pumping systems on low-lying Park Point near Duluth, Minn. *diags Eng & Contr* 43:309-10 Ap 7 '15
- Sewage disposal in Chilliwack, B. C. D. P. Dunn. *Munic J* 38:887-9 My 20 '15
- Sewer connections common trouble source. *Metal Work* 83:874 Je 18 '15
- Sewer construction at Ludington. G: W. Clark. *il Munic J* 38:62-4 Ja 21 '15
- Sewer construction, 1915; tabulation. *Munic Eng* 48:264-5 Ap '15
- Sewer street at Wichita. B. C. Wells. *Munic J* 38:857 Mr 18 '15
- Sewer tunnel construction in Alton, Ill. J. E. Schwaab. *Munic Eng* 48:43-4 Ja '15
- Sewerage in Salt Lake. *il Munic J* 38:347-8 Mr 18 '15
- Sheeting and pumping methods for Chicago sewer trench. *il Eng Rec* 71:245 F 20 '15
- Street flooding prevented by wide storm-sewer intakes. *il Eng Rec* 72:663 N 27 '15

**Sewerage—Continued**

Taking care of drainage at street intersections. C. V. Mann. *Il plan Eng N 74:221 J1 29 '15*  
 Water supply and drainage in Argentina. A. Dale. *Il Metal Work 84:103-6 J1 23 '15*  
*See also* Drain tile; Drainage, House; Plumbing; Sanitary engineering; Sewage; Sewage disposal; Sewage pumping; Sewer air; Sewer cleaning; Sewer design; Sewer explosions; Sewer gas; Sewer pipes; Sewers, Concrete; Trade waste; also San Francisco—Panama-Pacific International exposition—Sewerage

**Catch basins**

Comments on catch basins. *Munic J 38:348-9 Mr 18 '15*  
 Direct connected inlet vs. catch basin. A. F. Unckrich. *Munic J 38:694 My 20 '15*

**Cost**

Final report on Philadelphia's plan of sewage treatment. *Eng Rec 71:638 My 22 '15*  
 Handy method of estimating the cost of constructing pipe sewers. W. G. Kirchoffer. *Eng & Contr 44:285-6 O 13 '15*  
 Installing a half-mile sewer system; Gilbert, Minn. A. Cohn. *Eng N 74:364-5 Ag 19 '15*  
 Sewer work by day labor at Carlisle, Pa.; methods employed, hours of labor and itemized costs. J. C. Hiteshaw. *Il Munic J 38:506-8 Ap 15 '15*  
 Sewerage developments at Philadelphia, Pa. *Eng & Contr 43:sup20 My 26 '15*

**Damages from floods, etc.**

Performance of the New Orleans water, sewerage and drainage systems during the recent hurricane. G. G. Earl. *Eng & Contr 44:387-9 N 17 '15*

**Design***See Sewer design***Finance**

Privately financed system of sewers for the borough of Troy, Pennsylvania. H. W. Taylor. *Eng Rec 71:79-80 Ja 16 '15*

**Laws and regulations**

Features of the Ontario statutes and their administration affecting water supplies and sewerage systems. F. A. Dallyn. *Am Water Works Assn J 2:344-50 Je '15*  
 Maintenance of sewers and disposal works demands treatment of injurious trade wastes. W. L. Stevenson. *Eng Rec 71:256-60 F 27 '15*  
 Sewage disposal in Maryland; advantages of joint sewerage and sewage treatment systems for small towns. *Munic J 38:842-4 Je 17 '15*

**Maintenance and repair**

Cement gun for relining old brick and ashlar sewers. L. Chivvis. *Il Eng N 74:939-40 N 11 '15*  
 Reinforcing a vitrified-pipe sewer at Passaic, N. J. S. J. Naughton. *Eng N 73:096 Ap 8 '15*  
 Removal of bottle neck augments flow in sewer. *Il Eng Rec 71:486 Ap 17 '15*  
 Repairing a cracked sewer. L. B. Lawrence. *Il diag Munic J 38:217-18 F 18 '15*  
 Water and sewer maintenance in New Orleans. *Il Munic J 39:854-6 S 2 '15*

**Run-off***See Sewer design***Statistics**

Report of committee on sewerage statistics. Boston Soc C E J 1:263-76 My '14  
 Sewerage statistics for 1914. *Munic J 38:349+, 510 Mr 18, Ap 15 '15*

**Sewers, Concrete**

Beat scheduled time five months in building huge De la Brea sewer, Los Angeles. *Il Eng Rec 72:130-2 J1 31 '15*  
 Building a sewer tunnel of special concrete blocks reinforced. A. J. Latonell. *diags Eng N 74:127-8 J1 15 '15*  
 Concrete lining improves sewage-laden creek. J. D. Justin. *Il Eng Rec 72:101-2 J1 24 '15*

Constructing Passaic valley sewer. *Il plan diag Munic J 38:213-17 F 18 '15*  
 Construction features on the Passaic valley sewer. *Il diags Munic J 38:59-62 Ja 21 '15*  
 Construction of the Metcalf ave. sewer, borough of the Bronx, New York city. G. L. Christian. *Il diags Eng N 72:1164-7 D 10 '14*  
 Construction plant and methods employed in building a system of concrete block tunnel sewers at Edmonton, Alberta. *diags Eng & Contr 43:361-3 Ap 21 '15*  
 Construction plant and methods employed in the North shore intercepting sewer, sanitary district of Chicago. M. A. Berns. *Il Eng & Contr 42:568-9 D 16 '14*  
 Design and construction features of reinforced concrete sewer siphons under New York subways. T. L. Wilson. *Eng & Contr 43:128-9 F 10 '15*  
 Design and construction of the Arroyo de la Brea storm sewer system, Los Angeles, Cal. *Il Eng & Contr 44:5-6 J1 7 '15*  
 Effect of sewage and sewage gases on concrete. *Concrete Cem 7:31-2 J1 '15*  
 Improvement of Pogue's Run, Indianapolis, Indiana. *Il plans Munic Eng 48:236-9 Ap '15*  
 Indianapolis builds million dollar storm-water drain under railroad yards. *Il Eng Rec 71:560-1 My 1 '15*  
 Laying 48-in. concrete block sewer. *Eng N 74:703-4 O 7 '15*  
 Method and cost of constructing 42 and 48-in. concrete sewers at San Antonio, Tex. *Eng & Contr 44:258-5 S 29 '15*  
 Methods and costs in constructing, 42-in. and 48-in. monolithic concrete sewer. E. W. Robinson. *Il diags Concrete Cem 7:93-6 S '15*  
 New methods of pneumatic tunneling aid safe and rapid completion of Passaic valley sewer contract. *Il diags Eng Rec 71:130-3 Ja 30 '15*  
 Reinforced-concrete work well handled on Chicago sewer. *Il Eng Rec 72:612 N 13 '15*  
 Sewer form; telescopic type for monolithic construction. *Il Munic J 39:450-1 S 16 '15; Eng & Contr 44:214 S 15 '15*

**Sewing cabinets**

Working details of a sewing cabinet. R. F. Windoes. *diags Bldg Age 37:46-7 Ap '15*

**Sewing machines**

Dumore sewing-machine motor. *Il Elec R & W Elec'n 67:833 O 2 '15*  
 Electric drive for Wilcox & Gibbs sewing machine. *Il Elec R & W Elec'n 67:992 N 27 '15; Elec W 66:1230 N 27 '15*  
 Hamilton-Beach sewing-machine motor. *Il Elec R & W Elec'n 67:773 O 23 '15*  
 How sewing machine parts are molded and cast. H. C. Batop. *Il Foundry 43:345-51 S '15*  
 Needle threading device. *diags Textile World 50:79-80 O '15*  
 Seventy years of inventions. *Il Sci Am 112:511-12 Je 5 '15*  
 Westinghouse factory sewing-machine motor. *Il Elec R & W Elec'n 67:856 N 6 '15; Elec W 66:1048 N 6 '15*

**Sex in plants**

Altering the sex of date palm seedlings. *Sci Am 112:127 F 6 '15*

**Shade trees. See Trees****Shades and shadows***See also Perspective***Shaft gates**

Automatic safety lock and indicator for shaft gates. *diag Eng & Min J 99:1118-19 Je 28 '15*

**Shaft lining**

Ferro-concrete shaft linings. M. Gillieaux. *diags Colliery 35:609-11 Je '15*  
 Modifications in shaft design influenced by concrete as a lining material. *Eng & Contr 43:370 Ap 28 '15*

**Shaft sinking**

Bell-wire arrangement in sinking. C. P. Bernard. *diag Eng & Min J 99:323 F 13 '15*  
 Cementation process for sinking shafts. S. F. Walker. *Eng & Min J 100:58-9 J1 10 '15*  
 City tunnel of the Catskill aqueduct. W. E. Spear. *Il diags Eng N 73:98-103 Ja 21 '15*  
 Cost of sinking 900-ft. shaft. H. A. Linka. *diags Eng & Min J 100:845-7 N 20 '15*

**Shaft sinking—Continued**

- Method and cost of grouting a water bearing fissure and seamy rock in sinking a mine shaft. J. R. Reigart. *diags Eng & Contr* 44: 353-5 N 3 '15
- Methods and cost of shaft sinking at the Astoria tunnel, New York city. J. V. Davies. *Eng & Contr* 44:200 S 15 '15
- Methods and plant employed in sinking a vertical shaft at the Palma mine, Bessemer, Mich. F. Blackwell. *diags Eng & Contr* 42: 251-3 S 9 '14
- Methods and some costs of mine shaft sinking in very tough, hard rock. W. Y. Westervelt. *Eng & Contr* 43:326-7 Mr 10 '15
- Shaft-sinking with jackhammers. L. A. Palmer. *diag Eng & Min J* 100:598-9 O 9 '15
- Shaft timbering and headgear on the Mesabi range. *diags Eng & Min J* 99:1119 Je 26 '15
- Sinking by the drop-shaft method. C. Pilkington and P. L. Wood. *diags Colliery* 35:303-3 Ja '15
- Sinking new "C" shaft at the East Norrie mine, Ironwood, Mich. B. G. Best. *plan Eng & Min J* 100:437-8 S 11 '15
- Sinking shoe for soft ground. *diags Eng & Min J* 100:104-5 Jl 17 '15
- Unexcavated core is left in center in sinking circular subway shaft. *il diags Eng Rec* 71: 522-3 Ap 24 '15
- Unique method of sinking shafts in soft ground. L. T. Emory. *il Eng N* 73:397-8 F 25 '15; Same cond. *Eng & Min J* 99:945-6 My 29 '15
- See also* Drilling and boring (earth and rocks); Mining engineering
- Shafthouses**
- Shaft-rockhouse practice in the copper country. L. H. Goodwin. *il diags Eng & Min J* 99: 1061-6, 1107-10 Je 19-26 '15
- Shafting**
- Angle of torsion. B. D. Pinkney. *diags Mach* 22:58 S '15
- Angle of torsion. W. B. Gilbert. *diag Mach* 21: 331 Je '15
- Charts for determining sizes of transmission shafts. J. Y. Dahlstrand. *Mach* 22:129-30 O 15 '15
- Friction load of shaft bearings. *Elec W* 66: 809-11 O 9 '15
- Guarding of shafting. *il Ry R* 56:220-1 F 13 '15
- Preventing losses in factory power plants. S. J. El. White. *Iron Age* 95:848-9 Ap 15 '15
- See also* Belting
- Shafts**
- Centering shafts. C. E. Hendricks. *diag Mach* 21:1014 Ag '15
- Copper shock absorbing shaft. *diag Mach* 22: 70 S '15
- Distance between shaft bearings. B. D. Pinkney. *Mach* 21:716-16 My '15
- Improved form of flexible shaft. *diag Iron Age* 94:1287 D 3 '14
- Method of making a shrink fit. W. Swaren. *il Power* 40:816 D 8 '14
- Rothenschneider compression shaft coupling. *il Power* 42:620 N 2 '15
- Sleeving shrunk on worn armature shafts—rethreading pinion-end threads. *diag Elec Ry J* 45:720-1 Ap 10 '15
- Torsional oscillations of engine shaft; abstract. O. Mies. *diag Am Soc M E J* 37:406-7 Jl '15
- See also* Camshafts; Crankshafts; Hoisting machinery; Mine shafts; Power transmission; Shaft gates; Shaft sinking; Shafting
- Shafts, Mine. *See* Mine shafts
- Shale**
- Tests of frictional resistance of concrete on shale. El. L. Lasier. *il diag Eng N* 74:156-8 Jl 22 '15
- Shanal railway**
- Railways in China. *il Engineer* 119:347-8 Ap 9 '15
- Sharks**
- Natural history of the whale shark. El. W. Gudger. *il diags Sci Am S* 90:230-3, 246-7 O 9-16 '15
- Sharpening**
- Automatic band saw sharpener. *il Iron Tr R* 56:666 Ap 1 '15

- Electric edger for safety razors. *il diag Elec W* 66:711-12 S 25 '15; *Elec R & W Elec'n* 67:633-4 O 2 '15
- Gear generator tool grinding machine. *il Iron Age* 95:1230 Je 3 '15
- Imperial drill sharpener. *diag Eng & Min J* 99:414 F 27 '15
- Progress in machine shop methods. E. R. Norris. *Iron Tr R* 57:749 O 14 '15; Excerpt (Resharpening of files) *Iron Age* 96:1175 N 18 '15
- Sullivan drill sharpener. *il Eng & Min J* 99: 949-50 My 29 '15; *Eng & Contr* 43:475-6 My 26 '15; *Iron Age* 95:1287 Je 10 '15
- Wonder drill sharpener. *il Eng & Min J* 100: 191 Jl 31 '15
- Shears**
- Short rivet shear. El. T. Spidy. *diags Ry Age* (Mech ed) 33:542 D '14
- Sheep**
- Sheep raising in Oklahoma. G. L. Browning. *il Textile World* 49:591-3 S '15
- Sheep dips**
- Sheep dips in Uruguay. H. L. Spahr. *Textile World* 48:594; 49:656-7 Mr, S '15
- Sheet metal**
- Sheet metal for building construction. *Metal Work* 82:737-3 D 4 '14
- Sheet metal prevents spread of large fire. S. H. Bunnell. *il Metal Work* 83:110-12 Ja 8 '15
- See also* Tin plate
- Sheet metal contractors**
- Making the most of your business. P. F. Brandstedt. *Metal Work* 83:458-9 Mr 19 '15
- Sheet metal contractor's overhead expense. *Metal Work* 83:423-6 Mr 19 '15
- Sheet metal contractors, National association of.** *See* National association of sheet metal contractors
- Sheet metal contractors associations**
- Chicago sheet metal contractors. *Metal Work* 83:457 Mr 19 '15
- Chicago sheet metal contractors meeting, Nov. 2. *Metal Work* 84:627-8 N 12 '15
- Illinois sheet metal contractors meet. *Metal Work* 83:740-3 My 21 '15
- National association of sheet metal contractors' 11th annual convention. *Metal Work* 83: 890-8 Je 18 '15
- Ohio sheet metal contractors' convention. *Metal Work* 83:858-61 Je 11 '15
- Securing and keeping new members. G. El. Kohlmeier. *Metal Work* 83:384 Mr 13 '15
- See also* Michigan state association of sheet metal contractors
- Sheet metal machinery.** *See* Metal working machinery
- Sheet metal trade**
- American sheet metal products in Salvador. G. Harris. *il Metal Work* 83:800-1 Je 4 '15
- Buying suggestions made by successful men. *Metal Work* 83:423-6 Mr 19 '15
- Commercial side of the sheet metal business. P. L. Biersach. *Metal Work* 83:906-7 Je 18 '15
- Co-operation in the sheet metal trade. F. B. Hiller. *Metal Work* 83:164-5 Ja 22 '15
- Cost system of Michigan sheet metal shop. *Metal Work* 83:802-4 Je 4 '15
- Metal branch of National hardware association annual meeting, May 21-22. *Metal Work* 83:784-5 My 28 '15
- Sheet and tin-plate trades in 1914. B. El. V. Luty. *Iron Age* 95:10-11 Ja 7 '15
- Way to expand the sheet metal trade. F. K. Chew. *Metal Work* 83:786-7 My 28 '15
- Sheet metal work**
- Automobile sheet metal work in western city. *il Metal Work* 84:152-3 Jl 30 '15
- Blanks for rectangular and elliptical shells. F. J. W. Sparkuhl. *diags Mach* 21:687-8 Ap '15
- Dies for drawing flanged shells. El. P. Davis. *diags Mach* 21:532-4 Mr '15
- Establishing number of operations for drawing cylindrical shells. F. J. W. Sparkuhl. *Mach* 21:729-32 My '15
- Ford methods and the Ford shops. F. L. Faurote. *il Eng M* 48:859-76 Mr '15

**Sheet metal work—Continued**

Formulas for blank diameters of drawn shells.  
F. J. W. Sparkuhl. *diags* Mach 21:373-6 Ja '15

Making lamps for Christmas presents. W. Neubecker. *il diags* Metal Work 82:770-1 D 11 '14

Making rack for storage of sheet metal. *diags* Metal Work 83:313-14 F 26 '15

Press tools for making a roller bearing cage. *il diags* Mach 21:547-9 Mr '15

Rectangular drawing and trimming. J. M. Stabel. *diags* Mach 23:44-7 S '15

Safety in sheet metal operations. *il Am Ind* 15:supl-4 Ap '15

Sheet metal window shop in the Southwest. *il plan* Metal Work 83:96-7+ Ja 8 '15

Tools for making lamp wick-tubes and burner caps. R. Toeplitz. *il diags* Mach 21:1002-3 Ag '15

Wilzin process for flat-ware manufacture. *il Mach* 22:76-7, 80 S '15

Wilzin process of flatware manufacture. *il Metal Ind n s* 13:374-7 S '15

See also Brass; Cartridge cases; Copper; Dies; Punching machinery; Rolling mills; Shells; Tanks

**Accounting**

Accounting system for roofing business. E. B. Bourlier. *Metal Work* 83:39-42 Ja 1 '15

Cost system of Denver sheet metal shop. *il Metal Work* 84:175-8+ Ag 6 '15

**Exhibitions**

Sheet metal and plumbing work exhibited. *il Metal Work* 84:546-7 O 20 '15

**Pattern making**

Ball joint for blow-pipe connection. *diags* Metal Work 83:294-5 F 19 '15

Circle to ellipse offset transition piece. *diags* Metal Work 84:616-17+ N 12 '15

Constructing emery wheel exhaust heads. *diags* Metal Work 82:787-9 D 18 '14

Cyclone or centrifugal separator designs. *diags* Metal Work 84:50-1 JI 9 '15

Designing roof flanges for stove pipes. *diags* Metal Work 84:408+ S 24 '15

Developing pattern for roof flange and hood. *diags* Metal Work 84:283 Ag 27 '15

Developing pattern for taper joint. *diags* Metal Work 84:653 N 19 '15

Developing patterns for water pipe lateral. *diags* Metal Work 84:492-3 O 15 '15

Developing roof flange and plate pattern. *diags* Metal Work 84:335 S 10 '15

Faucet boss problem solved by triangulation. *diags* Metal Work 84:245-6 Ag 20 '15

Four-prong fork for pipe of blower system. *diags* Metal Work 83:811-12+ Je 4 '15

Making patterns for cone hopper and spout. *diags* Metal Work 84:112-13 JI 23 '15

Pattern for angular boot of varying section. *diags* Metal Work 84:456-7 O 8 '15

Pattern for construction of mason's chute. *diags* Metal Work 83:921-2 Je 25 '15

Pattern for irregular shaped copper funnel. *diags* Metal Work 84:6+ JI 2 '15

Pattern for offset in ventilation pipe. *Metal Work* 83:571-3+ Ap 16 '15

Pattern for spiral strips in dust separator. *diags* Metal Work 84:369-70, 545+ S 17, O 29 '15

Pattern for taper joint by triangulation. *diags* Metal Work 84:527 O 22 '15

Patterns for compound curve elbow of copper. *diags* Metal Work 83:417-19 Mr 19 '15

Patterns for intersecting conical spouts. *diags* Metal Work 83:627-9 Ap 30 '15

Patterns for offset Y from circular pipe. *diags* Metal Work 84:67-9 JI 16 '15

Patterns for sheet metal transforming elbow. *diags* Metal Work 83:357-8 Mr 5 '15

Simplified pattern for a Y fitting. *diags* Metal Work 83:258 F 12 '15

Simplified pattern for metal center boot. W. Neubecker. *diags* Metal Work 84:669+ N 26 '15

Various constructions of charcoal fire pots. *diags* Metal Work 84:649-51 N 19 '15

**Sheet metal work, Architectural**

Constructing galvanized iron silo roof. *diags* Metal Work 83:534-6 Ap 9 '15

Home instruction for sheet metal workers. W. Neubecker. *Metal Work* 81:97, 186-7, 332-3, 339-90, 456+ 524-5, 681-2, 718-19, 82:457+, 615-16, 667-8; 83:498-9, 665-7, 810+; 84:171-3, 297-3, 423-4, 581-2, 702-4+ Ja 9, 23, F 27, Mr 13, 27, Ap 10, My 22-29, O 2, N 20 '14, Ap 2, My 7, Je 4, Ag 6, S 8, O 1, N 5, D 3 '15

Laying galvanized corrugated roofing sheets. E. Stern. *diags* Metal Work 83:841-5 Je 11 '15

Method of laying standing seam roofing. *Metal Work* 83:497+ Ap 2 '15

Sheet metal for St. Ignatius church, San Francisco. W. A. Douglas. *il Metal Work* 83:162-3+ Ja 22 '15

Sheet metal gutter construction problems. *diags* Metal Work 83:700-1 My 14 '15

Sheet metal in farm buildings. *diags* plan Metal Work 83:181-3+ Ja 29 '15

See also Window frames

**Sheet metal workers**

Training apprentice sheet metal workers. O. E. Cluss. *Metal Work* 83:259-60 F 12 '15

**Sheet mills. See Rolling mills****Sheet piling**

Concrete anchor piles for steel sheeting. *diags* Eng N 73:1220-1 D 17 '14

Pulling steel sheetpiles with an inverted steam hammer. *il Eng N* 73:218-19 F 4 '15

**Sheeting. See Sheet piling****Shellac**

Determination of moisture in shellac. *J Ind & Eng Chem* 7:633 JI '15

**Shells**

Blanks for rectangular and elliptical shells. F. J. W. Sparkuhl. *diags* Mach 21:687-8 Ap '15

Dies for drawing flanged shells. E. P. Davis. *diags* Mach 21:533-4 Mr '15

Establishing number of operations for drawing cylindrical shells. F. J. W. Sparkuhl. *Mach* 21:729-33 My '15

Formulas for blank diameters of drawn shells. F. J. W. Sparkuhl. *diags* Mach 21:373-6 Ja '15

Machine for rough turning shell blanks. *il Iron* Age 95:1402 Je 24 '15

**Shells (projectiles)**

Cleveland shell banding and nosing press. *il diags* Mach 22:253-4 N '15

Dial feed attachment for large shells. *il Iron* Age 96:1222 N 25 '15

Hydraulic presses versus power presses for the manufacture of cartridges and shells; abstract. W. Rodger. *Am Soc M E J* 37: 612-13 O '15

Machine for cutting off copper bands. *il diags* Iron Age 96:243 JI 29 '15; *Mach* 21:1020 Ag '15

Machinery for the production of projectiles. *il Engineer* 120:116-17, 278, 338-9 JI 30, S 17, O 8 '15

Machining high-explosive shells. C. A. Tupper. *diags* Iron Age 96:806-9 O 7 '15

Machining projectile shells. *il diags* Iron Age 96:1099-1100 N 4 '15

Metals for shells. *Metal Ind n s* 13:461 N '15

Shell-case turning lathe with pneumatically-operated clutch. *il Sci Am* 113:472 N 27 '15

Shell turning and manufacturing lathe. *il Iron* Age 96:299 Ag 5 '15

Shell with a base-cap that precludes premature explosion. *il Sci Am* 113:469+ N 27 '15

Shell work engine lathes. *il Iron Age* 95:1394-5 Je 24 '15

Shells for destroying airships. *il Sci Am* 112:161 F 13 '15

Shells from European battlefields. *il Iron Age* 96:186-7 JI 22 '15

Shells of the calibers now in service. C. A. Tupper. *Iron Age* 96:1045-8 N 4 '15

Single-purpose lathe for shell work. *il Iron* Age 96:810-11 O 7 '15

6-in. rotary cutting off machine. *il Iron Age* 96:126-7 JI 15 '15

32-in. lathe for large shell work. *il Iron Age* 96:84 JI 8 '15

Three lathes designed for shell work. *il Iron* Tr R 57:396-7 N 4 '15

See also Projectiles; Shrapnel shells

- Shells, Unexploded**  
Detecting buried shells with induction balance. Sci Am 113:425-4 N 13 '15
- Sherardizing.** See Galvanizing
- Shingle mills**  
Electrically driven shingle mill. Il Elec R & W Elec'n 66:1123-3 Je 12 '15
- Ship plates.** See Plates, Iron and steel
- Ship propulsion**  
Boat design that eliminates bow waves and wake. C. Hering. Il Sci Am 113:335 O 9 '15;  
Discussion (Waveless boat). 113:447 N 20 '15  
Diesel engine propelled ship, Pacific; abstract. W. Kaemmerer. Am Soc M E J 37:601-2 O '15  
Economy. F. H. Sadler. diags Int Marine Eng 20:459-63 O '15  
New United States revenue cutters. diags plans Int Marine Eng 20:4-7 Ja '15  
Oil and suction producer gas engines for ship propulsion; abstract. Am Soc M E J 37:602 J '15  
Reduction gears on the Pennsylvania. Il diags Int Marine Eng 20:339-40 Ag '15  
Relative advantages of turbines, Diesel engine and reciprocating steam engine drive. Int Marine Eng 20:223 My '15; Same. Sci Am S 80:86 Ag 7 '15  
Submarine power plant. A. Hoar. Il Sibley J 30:59-63 N '15  
Submarine propulsion. P. H. Berggeen. Sibley J 30:71-2 N '15  
*See also* Boilers, Marine; Diesel engines, Marine; Motor ships; Propellers; Ship resistance; Steam turbines, Marine; Steamboats
- Ship propulsion, Electric**  
Applicability of electrical propulsion to battleships, together with the experience gained with it on the Jupiter; abstract. S. M. Robinson. Int Marine Eng 20:19-21 Ja '15  
Application of electricity to propulsion: fifty-foot motor boat equipped with electric drive for experimental purposes. W. T. Donnelly. Il diags Int Marine Eng 20:204-8, 264-6 My-Je '15  
Electric drive in the navy. Iron Age 94:1517 D 31 '14  
Electric propulsion. Int Marine Eng 20:339 Je '15  
Electric ship propulsion. W. L. R. Emmet. Power 41:657-8 My 11 '15; Abstract. Elec R & W Elec'n 66:826 My 1 '15; Abstract. Elec W 65:1139-40 My 1 '15  
Electrical propulsion on battleships. Int Marine Eng 20:3 Ja '15  
Modern submarines in war and peace. S. Lake. Il Int Marine Eng 20:502-3 N '15  
Performance of the electrically propelled collier Jupiter. S. M. Robinson. Eng N 73:393 F 25 '15  
Refinements of turbo-electric propulsion. Elec R & W Elec'n 66:934 My 22 '15  
Swedish ship with turbo-electric propulsion. Am Soc M E J 37:609 O '15  
Turbine-electric propulsion for battleships. Eng Rec 71:607 My 15 '15  
*See also* Electricity on ships
- Ship purchase bill**  
Government ship purchase bill. T. E. Burton. Sci Am 112:197-4 F 27 '15  
Government ship purchase bill: a defense of the administration's policy. J. W. Alexander. Sci Am 112:177-4 F 20 '15  
On the edge of the maelstrom of war. Sci Am 112:192 F 27 '15  
Shipping bill fallacy. Sci Am 112:94 Ja 30 '15
- Ship resistance**  
Calculations for ships' forms; light thrown by model experiments upon resistance, propulsion and rolling of ships. D. W. Taylor. Int Marine Eng 20:443-5 O '15 (to be cont)  
Expansion or contraction of dimensions and the effect upon resistance. H. C. Sadler. diags Int Marine Eng 20:11-14 Ja '15  
Experimental methods of the German government model tank "Berlin." Int Marine Eng 20:366, 417 Ag-S '15  
Suction between passing ships. S. A. Reeve. diags Sci Am S 79:31-2 Ja 9 '15
- Ship yards.** See Shipyards
- Shipbuilding**  
Conversion of cargo vessels into bulk oil carriers. F. K. Ruprecht. Int Marine Eng 20:185-6, 212-16, 256-9, 309-11, 340-3, 404-6 Ap-S '15  
Davits and the new requirements. H. W. Broady. Il diags Int Marine Eng 20:260-4, 305-9, 355-8 Je-Ag '15  
Failure of British steel ship plates. W. J. B. Wilson. Il Iron Age 96:610-12 Mr 18 '15; Abstract. Am Soc M E J 37:57-8 Ja '15  
Future bright for eastern shipyards. Iron Age 95:404-5 F 18 '15  
Higher battleship bids. Iron Age 96:1228-9 N 25 '15  
Introduction of a modern method in shipbuilding. W. Brown. diags Int Marine Eng 20:163-5 Ap '15  
Lloyd's register shipbuilding returns. Engineer 120:86 J1 23 '15  
Merchant shipbuilding in 1914 and the outlook. Iron Age 95:361 F 11 '15  
Output of Japanese shipyards in 1914. Il Int Marine Eng 20:170 Ap '15  
Shipbuilding in navy yards. Int Marine Eng 20:234-5 My '15  
Shipbuilding in 1914. Engineer 119:135-6 F 5 '15  
Shipbuilding in the United Kingdom in 1914. diags Int Marine Eng 20:58 F '15  
Shipbuilding in the United States in 1914. Int Marine Eng 20:34-5 Ja '15  
Small production of merchant ships. Iron Age 95:849 Ap 15 '15  
Surprising failure of steel ship plates. Int Marine Eng 20:50-1 F '15  
Technical aspects of shipbuilding contracts. H. Bocler. Int Marine Eng 20:455-6 O '15  
Unusual conversion; racing schooner Rainbow turned into a trading schooner. Il diags Engineer 119:177-8 F 19 '15  
World's shipbuilding. Sci Am S 80:82 J1 10 '15  
*See also* Car ferries; Launching; Marine engines; Motor ships; Naval architecture; Propellers; Ship propulsion; Ship resistance; Ships—Repair; Shipyards; Steamboats; Submarine boats; Tank ships; Towboats; Warships; Yachts
- Study and teaching**  
Questions and answers for marine engineers. See monthly numbers of International marine engineering
- Shipment of goods**  
Prompt shipment—what does it mean in business contracts. E. J. Buckley. Elec R & W Elec'n 66:530 Mr 20 '15  
Recording export shipments; how the detail instructions of different foreign buyers are preserved. H. A. Russell. Iron Age 96:930 O 21 '15  
Retailing steel mill products. Il plan Iron Tr R 56:65-71 Ja 7 '15  
Shipping 2000 Ford cars a day. M. Braun. Il plan Automobile 33:446-9 O 7 '15  
Where the delivering agent falls down. D. C. Davis. Ry Age 58:966 My 7 '15  
*See also* Packing for shipment
- Shipping**  
Review of the year 1914: merchant marine. Sci Am 112:6 Ja 2 '15  
Searching for contraband with X-rays. Il Sci Am 112:388 Ap 10 '15  
*See also* Commerce; Freight handling; Ports; Seamen's bill; Shipbuilding; Shipment of goods; Ships; Steamboat lines; Steamboats; Terminals; Waterways
- Great Britain**  
British shipping tonnage. Sci Am S 79:360 Je 5 '15  
Lloyd's annual report. Int Marine Eng 19:580-1 D '14  
Lloyd's register of shipping. Engineer 119:225-6 Mr 5 '15
- United States**  
American overseas trade. R. D. Williams. Iron Tr R 56:17-20 Ja 7 '15  
Decline of our merchant marine. Sci Am 113:136 Ag 14 '15  
Fair field and no favor. Sci Am 112:284 Mr 27 '15

**Shipping—United States—Continued**

- Problem of our merchant marine. C: Deepsee. Sci Am 111:455 D 5 '14  
 Profit in the Panama steamships. L. Nissen. Am Ind 15:31 Mr '15  
 Sharp passage on merchant marine at the National foreign trade council. Iron Age 95:247-8 Ja 28 '15  
 Special naval reserve and the merchant marine. H. L. Aldrich. Int Marine Eng 20:145 Ap '15  
 Storage rule for exports. Iron Age 95:254 Ja 28 '15

See also Ship purchase bill

**Shipping trusts**

- Dissolution suits brought by government against shipping combines. Iron Tr R 56:388g-388h F 13 '15

**Ships**

- Classification of ships. A. R. Liddell. Int Marine Eng 20:441-2 O '15  
 New ships needed for the Coast and geodetic survey. Int Marine Eng 20:2-3 Ja '15  
 Speed control on dreadnought Pennsylvania. Int Marine Eng 20:200-1 My '15  
 Typical ships. II diag plan (supp) Engineer 117:366-70; 118:229-32, 359-62, 578-5 Ap 3, S 4, O 16, D 18 '14

See also Car ferries; Coaling vessels; Electricity on ships; Freight ships; Ice-breaking vessels; Launching; Light ships; Motor ships; Naval architecture; Navies; Navigation; Propellers; Refrigeration in transportation; Repair ships; Revenue cutters; Safety at sea; Sailing vessels; Salvage ships; Ship resistance; Shipbuilding; Shipping; Shipwrecks; Steamboats; Submarine boats; Tank ships; Torpedo boat destroyers; Torpedo boats; Towboats; Warships; Yachts

**Lighting**

- Lighting of ships. L. C. Porter. II Gen Elec R 18:143-6 F '15; Same. Int Marine Eng 20:336-8 Ag '15

**Models**

- Naval engineering ship models. F. Van Vleck. Int Marine Eng 20:22 Ja '15

**Repair**

- How to avoid big repair bills. "Old Scotch." Int Marine Eng 20:267 Je '15  
 Repairing the Gulfight. II Sci Am 113:318 O 9 '15  
 Torpedo damage to the oil tanker Gulfight. II Int Marine Eng 20:620-1 N '15

**Sanitation**

- Steam disinfection for sewage on common carriers. diag Eng Rec 71:43 Ja 9 '15; Same (Sewage treatment on trains and boats). Eng M 48:917-18 Mr '15

**Stability**

- Eastland disaster and vessel stability. R. A. Towler. Eng N 74:516-17 S 9 '15  
 Electric stabilizer for steamships. Elec R & W Elec'n 67:290-1 Ag 14 '15  
 Electrically driven gyroscope in marine work. H. C. Ford. II Am Inst E E Pro 33:873-87 Je '14; Same. Sci Am S 78:268-9, 284-5 O 24-31 '14; Same cond. Eng M 47:911-13 S '14; Discussion. Am Inst E E Pro 33:1890 D '14  
 Safety of lake and coastwise passenger steamers. C. D. Irwin. Sci Am 113:271 S 25 '15  
 Stability of vessels as affected by damage due to collision. W: Gutewood. Int Marine Eng 20:156-8 Ap '15  
 Water-ballast tanks and the Eastland disaster. F. R. Harris. Eng N 74:497-8 S 2 '15

**Ships, Iron and steel**

- Shallow draft boat for the Yangtze Kiang. plans Int Marine Eng 20:490-2 N '15

**Ships, Speed of**

- Formula for estimating the speed of a boat. Int Marine Eng 20:360 Ag '15

**Shipwrecks**

- Repairs to lake freighter H. M. Hanna, Jr. II Int Marine Eng 19:564-6 D '14  
 See also Collisions at sea; Salvage; also Eastland (steamship)

**Shipyards**

- Shipyards at Prince Rupert terminal. W: T. Donnelly. II diag Int Marine Eng 20:120-2 Mr '15

**Shock absorbers**

- Absorber permits limited free motion. diag Automobile 33:802 O 28 '15  
 Friction disks in new Hartford absorber. II Automobile 31:1265 D 31 '14  
 Jenney shock absorber. II Automobile 33:522 S 16 '15  
 New J. M. shock absorber. II Automobile 32:994 Je 3 '15

**Shoddy**

- Shoddy in woolen fabrics. K. B. Lamb. II Textile World 49:154-6 My '15

**Shoe cloth**

- English, Belgian and German shoe cloths. Textile World 48:388-9 Ja '15

**Shoe factories**

- Electricity in a Massachusetts shoe factory. T: D. Bond. II Elec W 66:88-90 Jl 10 '15

**Shoes**

- Shoe-button attaching machine. II diag Sci Am 112:410 My 1 '15

**Shone ejectors. See Sewage ejectors****Shooting**

- Whiplash crack and bullet sound waves. H. P. Maxim. II Sci Am 113:231 S 11 '15

See also Range finding; Rifle ranges

**Shooting, Military**

- Accuracy of fire; the principal causes affecting the fire of big guns. H. J. Jones. Sci Am S 80:291 N 6 '15  
 Indirect fire. E. Vallier. Eng M 50:454-5 D '15

**Shop hospitals. See Hospitals, Factory****Shop management**

- Best methods of dealing with men. H. E. Gamble. Ry Age (Mech ed) 89:61 F '15  
 Conservation of material in the railroad repair shop. E. Cordeal. Eng M 48:827-32 Mr '15  
 Expert in the railroad repair shop. E. Cordeal. Eng M 49:351-6 Je '15  
 Railroad locomotive repair shop organization. H: Gardner. Ry Age 59:597-9 O 15 '15  
 Shop management and what it means. E. W. Wallbank. Foundry 48:299-300 Ag '15  
 Standardization of methods in the railroad shop. E. Cordeal. Eng M 48:722-7 F '15  
 Wage systems in the railroad repair shop. E. Cordeal. Eng M 49:51-7 Ap '15

See also Factory management; Foundry management; Machine shop management; Organization in industry; Scientific management

**Shops**

- See also Blacksmith shops; Bridge shops; Carpenter shops; Electric railroads—Shops; Locomotive shops; Machine shops; Mine shops; Plumbing shops; Railroads—Shops

**Shops, Repair. See Repair shops****Shore protection**

- Coast erosion and protection on Long Island and New Jersey. G. O. Case. map Eng N 74:348-51, 388-91, 438-42 Ag 19-S 2 '15  
 Concrete bleachers protect Massachusetts shores; defense works at Revere beach. II diag Eng Rec 71:429, 628 Ap 3, My 15 '15  
 Design of shore-protection works. R. Bennett. diag Eng N 74:98-101 Jl 15 '15; Abstract. Eng M 50:468-8 D '15  
 Design suggested for shore-protection works on the New Jersey coast. E. F. Cresson, Jr. diag Eng N 73:904-5 My 6 '15; Eng Rec 71:547-8 My 1 '15

- Fighting the sea with compressed air. R. G. Skerrett. II Sci Am 112:97 Ja 30 '15

- Flooring the sea with concrete. W. J. L. Kiehl. II Sci Am 113:461 N 27 '15

- San Francisco shore protection. diag Eng N 74:571 S 16 '15

See also Bulkheads; Flood control; Rivers—Regulation; Sea walls

**Shoring and underpinning**

- Heavy needling for 450-ton column loads for subway underpinning. II diag Eng Rec 71:565-6 My 1 '15



**Shoring and underpinning—Continued**

- Jacking up a concrete arch over a settling pier. W. P. Darwin. *Eng N* 73:588-9 Mr 25 '15
- Large number of light needles hold 606-ton brick wall. *diag Eng Rec* 72:87-8 Jl 17 '15
- New adjustable shore. *Il Concrete Cem* 7:46-7 Jl '15
- New York rapid transit railway extensions. F. Lavis. *Il diag Eng N* 72:1160-5 D 10 '14
- Rebuilding elevated railways in New York city. *Il diag Eng N* 74:830 S 30 '15
- Righting a twenty-thousand-ton grain elevator. *Il Sci Am* 111:524 D 26 '14
- Righting the tilted grain elevator of the Canadian Pacific Ry. *Il Concrete Cem* 6:196 Ap '15
- Shoring a large 9-story building during freezing weather at Detroit. *Il Concrete Cem* 6:197 Ap '15
- Soil tests reported and safe underpinning methods in sand described. J. F. Greathead. *diag Eng Rec* 72:631-3 N 20 '15
- Steel shields protect traffic during removal of New York subway roof. *Il Eng Rec* 72:110-12 Jl 24 '15

*See also* Building; Subway timbering

**Short ballot**

- Good government and popular government getting together. H. S. Gilbertson. *Am Ind* 15:15-16 Ap '15
- List of short ballot cities. *Munic J* 33:696 My 30 '15

**Short circuits**

- Calculation of sudden short circuit phenomena of alternators. N. S. Diamant. *diag 6 p Is Am Inst E E Pro* 34:2043-79 S '15
- Mechanical effects of electrical short-circuits. S. H. Weaver. *Gen Elec R* 18:1066-74 N '15

**Shot iron. See Iron founding****Shoveling machines**

- Gasoline shovels are auxiliary to steam equipment. *Il Eng N* 74:798-9 O 21 '15; Same. *Eng & Min J* 100:806-7 N 13 '15
- Halby shoveling machine for underground mining. *Il Eng & Min J* 99:960 My 29 '15; *Iron Tr R* 57:266 Ag 5 '15
- Power scraper shovel for ore boats. *Il Iron Age* 96:1115-16 N 11 '15

*See also* Electric shovels; Steam shovels

**Shovels**

- Adjustable pole-hole digger. *Il Elec W* 66:1049-50 N 6 '15
- Economic choice of shovels for handling different classes of material. C. W. Hartley. *Eng & Contr* 43:302-3 Mr 31 '15

*See also* Shoveling machines

**Shovels, Electric. See Electric shovels****Shovels, Steam. See Steam shovels****Show windows**

- Campaign for increasing hours of show-window lighting. *Elec R & W Elec'n* 66:680 Ap 10 '15
- Co-operative power customers' display at Hartford. *Il Elec W* 65:803 Ja 30 '15
- February window displays. A. J. Edgell. *Il Elec W* 65:284 Ja 23 '15
- Master plumber and the show window. *Il Metal Work* 83:349-50 Mr 5 '15
- New Year window display. A. J. Edgell. *Il Elec W* 64:1267 D 26 '14
- New York appliance salesroom attracted many Christmas shoppers. *Il Elec W* 65:117 Ja 9 '15
- Preventing steaming of show windows. *diag Metal Work* 83:152 Ja 23 '15
- Prismatic-glass window reflector. *Il Elec R & W Elec'n* 67:440-1 S 4 '15
- Show-window lighting in war time. J. S. Dow. *Il Am Gas Light J* 103:805 My 17 '15
- Stimulating sales by window displays. J. P. Zingg. *Il plans Metal Work* 83:564-8+ Ap 16 '15
- Successful merchandising for the plumber. H. Whitehead. *Dom Eng* 70:78-9 Ja 16 '15
- Talking show window. *Il Sci Am* 113:431 N 13 '15
- Using a store entrance for night displays: elevated show windows. *Il Sci Am* 112:155-6 F 13 '15
- Value of window display. *Am Gas Light J* 103:52-4 Jl 26 '15

Window displays boost regulator sales. *Il Metal Work* 83:46-8 Ja 1 '15

**Shower baths**

- Shower baths in the schools. J. Graham. *Il diag Dom Eng* 70:233-5 F 20 '15
- Shower equipment in Jersey schools. plans Metal Work 83:837 Je 11 '15

*See also* Bath cars

**Shrapnel shells**

- Ammunition components, United States army—principle dimensions and general specifications. *Iron Age* 96:sup358a Ag 12 '15
- Banding and nosing press for shrapnel. *Il Iron Age* 96:1104 N 4 '15
- Cast vs. forged shrapnel casing. *Foundry* 43:298-9 Ag '15
- Collapsing adjustable shrapnel tap. *Il Iron Age* 96:745 S 30 '15
- Collapsing tap for shell work. *diag Iron Tr R* 57:447 S 2 '15
- Details of Russian shrapnel. H. M. Davis. *Iron Age* 96:797 O 7 '15
- Die head for threading shrapnel parts. *Il Iron Age* 96:981 O 23 '15
- Equipment for forging shrapnel cases. C. A. Trupper. *Iron Age* 96:512-14 S 2 '15
- Ford-Smith shrapnel shell grinder. *Il Mach* 22:68-9 S '15
- Forging shrapnel shells. D. T. Hamilton. *Il diag Mach* 21:614-13 Ap '15; Same. *Sci Am* S 79:404-6 Je 26 '15
- 14-in. heavy automatic shrapnel lathe. *Il Iron Age* 96:454 F 25 '15
- Grinding center bosses from shrapnel. *Il Iron Age* 96:568 S 9 '15
- Grinding large shells and projectiles. C. O. Smith. *Il diag Iron Age* 96:445-7 F 25 '15
- Heat-treatment and testing of shrapnel shells. J. M. Wilson. *diag Mach* 22:28-31 S '15
- Heavy single operation shell lathe. *Il Iron Age* 96:82 Jl 8 '15
- Hydraulic nosing and banding presses. *Il Mach* 22:72 S '15
- Machining and assembling shrapnel cases. C. A. Trupper. *diag Iron Age* 96:570-3 S 9 '15
- Machining of a shrapnel shell case: the Reed-Prentice system. *diag Iron Age* 96:73-4 Ja 7 '15
- Machining shrapnel shells. D. T. Hamilton. *Il Mach* 21:619-39 Ap '15; Same. *abr. Sci Am* S 80:12-13 Jl 8 '15
- Machining shrapnel shells: tool equipment used on the Potter & Johnston automatic chucking and turning machine. *Il diag Mach* 21:572-5 Mr '15
- Making cartridge cases. D. T. Hamilton. *Il diag Mach* 21:651-6 Ap '15; *Excerpt. Sci Am* S 80:29-30 Jl 10 '15
- Making fuse parts. *Il diag Mach* 21:641-50 Ap '15
- Manufacture of shrapnel. *Il diag Metal Ind n* 13:137-9 Ap '15
- Pneumatic press for banding shrapnel. *Il Iron Age* 96:1398 Je 24 '15
- Shrapnel and shrapnel manufacture. D. T. Hamilton. *Il diag Mach* 21:609-13 Ap '15; Same. *Sci Am* S 79:385-8 Je 19 '15; *Abstract. Eng M* 49:416-19 Je '15
- Special shrapnel cutting-off machine. *Il Iron Age* 96:193 Jl 22 '15
- Spraying shrapnel shells. *Il Iron Age* 96:355 Ag 12 '15
- Trimming machine for shrapnel shells. *Il Iron Age* 96:1225 Je 3 '15
- Vertical milling machine for shrapnel. *Il Iron Age* 96:1281 Je 10 '15
- Victor shrapnel shell tap. *Il diag Mach* 22:70 S '15

**Shrinking. See Fitting (machinery)**

**Shrubs**

- Selecting trees and shrubs. *Am For* 21:591-3 Ap '15

**Siberia**

- Opportunities for electrical manufacturers in Siberia. *Elec W* 65:267 Ja 23 '15
- Topographic features of Siberia. C. W. Purington. *Il maps Econ Geol* 10:453-61 Jl '15
- Trip to the Siberian-Mongolian frontier. N. B. Knox. *Il Eng & Min J* 98:1027-33 D 12 '14

**Siberia—Continued****Industries and resources**

Ridder mine of the Irtysk corporation. *Il map Eng & Min J 99:599-603 Ap 3 '15*

**Siberian railway**

Connecticut to Poland by the way of the Pacific; how munitions are shipped to Russia across Asia. H: H. Suplee. *map Sci Am 113: 115 Ag 7 '15*

Vladivostok open all the year. J. K. Caldwell. *Sci Am 113:487 D 4 '15*

**Sibley, Missouri****Bridges**

New bridge across the Missouri river at Sibley. *Il diag Ry Age 59:13-16 Jl 2 '15*

Sibley college. See Cornell university. Sibley college

**Sicily. See Geology—Sicily****Sidewalks**

Construction details and costs. *Munic J 38:153-9 F 4 '15*

Cost of resurfacing macadam walks with asphalt. Lincoln park, Chicago. M. D. Blumberg. *Eng & Contr 43:512-13 Je 9 '15*

Sidewalk problem; its solution in Pawtucket, Rhode Island. *Eng N 73:843 Ap 29 '15*

Sidewalk work in Cincinnati. D. L. Barr. *Munic J 38:763-6 Je 3 '15*

Sidewalks in cities, 1915; tabulation. *Munic Eng 48:261-2 Ap '15*

Street and sidewalk improvement in the United States and Canada; tabulation. *Munic Eng 48:353-8 Je '15*

See also Pavements

**Sidewalks, Concrete**

Costs and methods on the construction of a large concrete sidewalk. Harrisburg, Pa. J. D. Justin. *Eng & Contr 44:166-7 S 1 '15*

Destruction of cement sidewalks by trolley poles. C. H. Fuller. *Elec Ry J 46:332-3 O 16 '15*

Expansion in concrete sidewalks. *Munic J 38: 770-1 Je 3 '15*

Making concrete walks on the farm. P. H. Wilson. *Il diag Bldg Age 37:71 F '15*

Splitting of concrete sidewalks surrounding iron posts. C. H. Fuller and others. *diag Concrete Cem 6:246-8 My '15*

**Sieges**

Mining and countermining of fortifications. *Il Sci Am 111:464-5 D 5 '14*

**Siena****Architecture**

American academy in Rome; the Palazzo Piccolomini at Siena. K. E. Carpenter. *Il Am Inst Arch J 3:132-3 Ap '15*

**Sieves**

Standardization of no. 200 cement sieves. R. J. Wig and J. C. Pearson. *pls U S Bur Stand Tech Fa 42:1-51 '14*

**Sight**

Minimum visual angle. *Sci Am S 80:93 Ag 7 '15*

Recent experiments on vision in animals. H. M. Johnson. *bibliog Illum Eng Soc 10: 502-14 no 6 '15*

Résumé of the physical, physiological and psychic phases of vision. N. M. Black. *diags Illum Eng Soc 10:562-86 no 7 '15*

Visual pattern-discrimination in the vertebrates: difference-threshold for band-width in the monkey and the domestic chick. H. M. Johnson. *J Fr Inst 180:238-40 Ag '15*

See also Color sense; Eye; Spectacles

Sights for firearms. See Firearms—Sights

**Signals**

New hydrographic signal of the U. S. coast and geodetic survey. *diags Eng N 74:27-8 Jl 1 '15*

Signaling apparatus used by alrships. *Il Sci Am 113:266 S 25 '15*

See also Aeronautics—Signals; Automobile signals; Electric railroads—Signals; Electric signals; Fire alarms; Fog signals; Light signals; Pneumatic signals; Railroads—Signals; Telegraph; Time signals; Wireless telegraph

Signals, Electric. See Electric signals

Signals, Mine. See Mine signals

Signals, Pneumatic. See Pneumatic signals

Signals, Railroad. See Railroads—Signals

Signals, Submarine. See Submarine signals

**Signs**

Holder for danger signs. J. E. Cooley. *Il Eng & Min J 100:477 S 18 '15*

New type of illuminated sign. *Il Illum Engr 8:400-1 S '15*

See also Car signs; Electric signs; Road signs; Street signs

Silage. See Ensilage

Silence. See Sound

**Silica, Fused**

Fused silica dishes for the concentration of sulphuric acid. A. E. Marshall. *diag Met & Chem Eng 13:136-7 Mr '15*

Heat transmission capacity of a silica dish. W. K. Lewis. *Il diag J Ind & Eng Chem 7:410-14 My '15*

Silica brick. See Fire brick

Silicate of soda. See Sodium silicate

**Silicates**

Hydration of Portland cement. A. A. Klein and A. J. Phillips. *pls U S Bur Stand Tech Pa 43:3-71 '14*

Silicon oxycarbide. See Fibrox; Silundum

**Silicon steel**

Longest simple truss span in world to be erected over Ohio river at Metropolis. *diag Eng Rec 72:52-4 Jl 10 '15; Abstract (Silicon steel for bridge construction). Eng M 49:913 S '15*

Ohio river bridge for the C., B. & Q. R. R. *diag Eng N 74:230-2 Jl 29 '15*

**Silk**

Heddles for weaving broad silks. *Textile World 50:213 N '15*

International classification of raw silks by its defects. W. P. Seem. *Textile World 48:435-8, 579-81; 49:31-4, 157-9, 326-8 F-Je '15*

Silk culture in America. C. A. Byers. *Il Textile World 49:332-4 Je '15*

Streaks in silk goods. *Textile World 49:102-3 Ap '15*

See also Textile industry and fabrics

**Dyeing**

See Dyes and dyeing—Silk

**Silk, Artificial**

Dyeing artificial silks. E. C. T. Bick. *Textile World 49:119-20 Ap '15*

Formula for treating artificial silk. *Textile World 48:328 D '14*

Manufacture of artificial lustrous threads by the viscose process. W. F. Cooper. *Textile World 50:129-30 O '15*

Silk convention, National. See National silk convention

**Silk machinery**

Machine for shearing or picking silk goods. *Il Textile World 49:377-8 Je '15*

SPH ties. See Railroad ties

Sil-O-Cel powder. See Celite

**Silos**

Chemical changes during silage formation. R. E. Neidig. *Am Chem Soc J 36:2401-13 N '14*

Constructing galvanized iron silo roof. *diags Metal Work 33:534-6 Ap 9 '15*

**Silos, Concrete**

Building concrete silos—monolithic construction—types of commercial equipment. C. D. Gilbert. *Il diags Concrete Cem 7:58-62, 82-3 Ag '15*

Building concrete silos—the plastered silo. *Il Concrete Cem 7:122-4 S '15*

Building concrete silos—unit construction with blocks and staves; with cost tables. C. D. Gilbert. *Il diags Concrete Cem 7:3-6, 37-8 Jl '15*

Concrete silos are preferred in Missouri. *Concrete Cem 7:113 S '15*

Methods and costs in constructing a combined concrete silo and water tank. *Il diag Concrete Cem 8:162-4 Mr '15*

**Silos, Concrete—Continued**

Methods used in constructing a 108-ft. monolithic concrete silo near Salona, Pa. *Il diag* Concrete Cem 6:301-2 *Je* '15

Silo form with new features. *Il* Concrete Cem 7:126-7 *S* '15

**Silt**

Solving the silt problem: reservoirs suggested for muddy streams of the Southwest. *L: C. Hill. Eng Rec* 70:609-10 *D* 5 '14

**Silundum**

Preparation, properties and composition of silundum. *S: A. Tucker and A. Lowy. Il diag J Ind & Eng Chem* 7:565-71 *Jl* '15

**Silver**

Action of finely divided silver on  $\alpha$ -bromo- and  $\alpha$ -odopalmitic acids: synthesis of two isomeric ditetradecylsuccinic acids. *D. B. Jones. Am Chem Soc J* 37:586-94 *Mr* '15

Experiments in the enrichment of silver ores. *L: G. Ravicz. Econ Geol* 10:368-89 *Je* '15

Gold and silver statistics. *F: Hobart. Eng & Min J* 99:47-8 *Ja* 9 '15

Milling at the Nipissing mines co. *Eng & Min J* 99:1124 *Je* 26 '15

New crystalline variety of silver. *T. C. Choudhri. Am Chem Soc J* 37:2037-9 *S* '15

Occurrence of silver in argentiferous galena ores. *A. E. Nissen and S: L. Hoyt. pls Econ Geol* 10:172-9 *F* '15

Potential of silver against silver ion in concentrated solutions of potassium and of sodium chloride, and its relation to the activities of such solutions. *G: S. Forbes and F: O. Anderegg. Am Chem Soc J* 37:1676-85 *Jl* '15

Treatment of waste material containing silver. *R. J. Marsh. Metal Ind n s* 13:314-17 *Ag* '15

*See also* Cyanide process; Silver metallurgy; Silver mines and mining; Silver plating; Silver salts; Silverware

**Silver assaying**

Determination of silver in ores and concentrates containing platinum and palladium. *A. M. Smoot. Eng & Min J* 99:701 *Ap* 17 '15

Gold and silver assaying. *S. Fischer, Jr. Met & Chem Eng* 12:771-3 *D* '14

**Silver iodide**

Properties of silver iodide interpreted in relation to recent thermodynamic conceptions. *G. Jones and M. L. Hartmann. diag Am Chem Soc J* 37:752-75 *Ap* '15

**Silver metallurgy**

Chloridizing blast roasting and leaching. *G. A. Keep. Il diag Eng & Min J* 99:265-9, 315-22 *F* 6-13 '15

Chloridizing ores at Silver City, Utah. *Il diag Met & Chem Eng* 12:757-9 *D* '14

Desilverizing copper matte with lead. *Eng & Min J* 99:1046 *D* 12 '14

Lead acetate and zinc salts in silver extraction. *C: R. Morris. Eng & Min J* 100:189-90 *Jl* 31 '15

Phillips process for treating cobalt-silver ores. *Eng & Min J* 99:1120 *Je* 26 '15

Progress in gold and silver metallurgy in 1914. *Met & Chem Eng* 13:3-5 *Ja* '15

Recovery of mercury from amalgamation tailing. *Buffalo mines, Cobalt; with flow sheet. E. B. Thornhill. Am Inst Min E Bul* 104:1653-7 *Ag* '15; *Abstract. Met & Chem Eng* 13:330-1, 873 *My*, *N* 15 '15

*See also* Cyanide process

**Silver mines and mining**

Alta activities. *Il Eng & Min J* 99:689-90 *Ap* 17 '15

Confugas mines; report for year ended Oct. 31, 1914. *Eng & Min J* 99:197 *Ja* 23 '15

Fond du Lac silver strike; discovery not verified. *G. C. Bateman. Eng & Min J* 99:787 *My* 1 '15

Gold and silver in Chile. *M. R. Lamb. Il Eng & Min J* 99:847-9 *My* 15 '15

Tonopah in 1914. *F: Bradshaw. Eng & Min J* 99:164-5 *Ja* 16 '15

Volcano, a new Nevada strike. *F. C. Lincoln. Il Eng & Min J* 100:73 *Jl* 10 '15

**Silver nitrate**

Potential of silver in nonaqueous solutions of silver nitrate. *V. L. Gibbons and F. H. Getman. bibliog diag Am Chem Soc J* 36:1630-55 *Ag* '14

Use of silver nitrate as a testing agent. *Int Marine Eng* 20:85 *F* '15

**Silver nitrite**

Determination of the solubility of silver nitrite and its degree of dissociation in a saturated solution. *H: J. M. Creighton and W: H. Ward. Am Chem Soc J* 37:2333-8 *O* '15

**Silver plating**

Making the silver solutions. *O. A. Hillman. Metal Ind n s* 13:416-17 *O* '15

Silver solution assay. *E. J. Hall. Metal Ind n s* 13:154 *Ap* '15

*See also* Electroplating; Silvering

**Silver salts**

New hydroxyurethanes and chromoisomeric silver salts of their acyl derivatives. *L. W. Jones and R. Oesper. Am Chem Soc J* 36:2208-23 *O* '14

Relative solubility of certain silver salts. *A. E. Hill. Am Chem Soc J* 37:510-13 *Mr* '15

Solubility of certain difficultly soluble silver salts. *A. Thiel. Am Chem Soc J* 37:508-10 *Mr* '15

**Silvering**

Protecting silvered mirrors by copper plating. *Il diag Sci Am S* 79:28 *Ja* 9 '15

**Silverware**

South American market for jewelry and silverware. *U S Sp Cons Rep* 70:1-23 '15

**Sl Maloe**

Logging Rasak and Lagan. *T. R. Helms. Il Am J* For 21:1050-3 *N* '15

**Sinking funds**

Premium or discount on bonds in sinking fund. *S. Walton. J Account* 19:390-2 *My* '15

Sinking funds in rate valuations. *W. H. Lawton. J Account* 19:191-7 *Mr* '15

**Sintering**

Flue dust sintering plant at Gary, Ind. *Il plan Iron Age* 96:1168-70 *My* 27 '15

Mechanical progress of sintering. *B. G. Klugh. diag Iron Tr R* 57:835-8+ *O* 28 '15; *Same. Iron Age* 96:1000-4 *O* 28 '15; *Discussion. H. A. Brassert. Iron Tr R* 57:845 *O* 28 '15; *Discussion. R. E. Brooke; H. A. Brassert. Iron Age* 96:1004-5+ *O* 28 '15

New sintering plant at Gary, Ind. *plan Eng & Min J* 100:107 *Jl* 17 '15

Rotary sintering kilns at Gary. *H. C. Estep. Il diag Iron Tr R* 56:1020-2 *My* 20 '15

*See also* Dwight-Lloyd process

**Siphons**

Design and construction features of reinforced concrete sewer siphons under New York subways. *T. L. Wilson. Eng & Contr* 43:128-9 *F* 10 '15

Method and cost of constructing an inverted sewer siphon of 12 in. cast iron pipe, encased in concrete, beneath small stream at Carlisle, Pa. *C. A. Bryan. diag Eng & Contr* 42:161-3 *Ag* 12 '14

Siphoning water from series of drilled wells to a common pump well at Kokomo, Ind. *O. O. Jones. plan Eng & Contr* 43:191 *Mr* 3 '15

Why does the siphon break? *diag Dom Eng* 72:173 *Ag* 7 '15

**Syrups. See Syrups****Sizing (textiles). See Cotton sizing****Skim gate. See Foundries—Equipment and supplies****Skin effect**

Experimental researches on skin effect in conductors. *A. E. Kennelly, F. A. Laws and P. H. Pierce. Il diag Am Inst E E Pro* 34:1749-1809; *Bibliog.* 1809-14 *Ag* '15

Skin effect in bimetallic wires. *J: M. Miller. Elec W* 65:1612-13 *Je* 19 '15

**Skykomish basin, Washington**

Petrology and economic geology of the Skykomish basin, Washington. *W. S. Smith. Il map Sch Mines Q* 36:164-85 *Ja* '15

**Skylights**

Flat skylight on structural steel frame. *diag Metal Work* 83:759-61 *My* 28 '15

Improved skylight. *W: C. Linton. Il Metal Work* 84:550 *O* 29 '15

New type of skylight construction. *diag Iron Age* 96:1164 *N* 18 '15

**Skyscrapers. See High buildings**

- Slabbing machine**  
Vertical slabbing machine. *Il Iron Tr R* 56:1105 Je 3 '15
- Slag**  
Action of fluorspar on basic open-hearth slags. W. S. Hamilton. *Met & Chem Eng* 13:8 Ja '15  
Advantages of high-lime slags in the smelting of lead ores. S. E. Bretherton. *Am Inst Min E Bul* 104:1595-9 Ag '15; Discussion. 108:2479-81 D '15  
Blast furnace slag for railway ballasting. *Il plan Engineer* 120:395-6 O 22 '15  
Blast furnace slag handling system. F. L. Prentiss. *Il Iron Age* 95:1398-8 Je 24 '15  
Characteristics of slag and chat ballast. P. H. Hamilton. *Ry Age* 58:1437-8 Je 18 '15  
Handling of iron and cinder at the blast furnace. J. E. Johnson, jr. *Il Met & Chem Eng* 13:85-9 F '15  
High phosphorus slag from open-hearth or electric furnaces. *Iron Age* 96:295 Ag 5 '15  
How to make steam from slag. W. L. Johnson. *diags Iron Tr R* 55:1139-40 D 17 '14  
Kennedy slugger type crusher. *Il Iron Tr R* 57:27 Jl 1 '15  
Making money from furnace slag. *Il Iron Tr R* 56:1818-19 Je 24 '15  
Metal loss in copper slags. F. E. Lathe. *Eng & Min J* 100:215-17, 263-8, 305-8 Ag 7-21 '15  
Slags from titaniferous ores. F. E. Bachman. *diag Iron Tr R* 55:1040-2 D 3 '14  
Special type of slag handling crane. *Il Iron Age* 95:939 Ap 29 '15  
Use of blast furnace slag as an aggregate in concrete. *Concrete Cem* 5:247-9; 6:210-11 D '14, Ap '15  
Zinc oxide from lead blast furnace slag, as in operation at south Chicago. H. B. Pulsifer. *Il Met & Chem Eng* 13:783-5 N 1 '15  
*See also Blast furnaces*
- Transportation**  
Tariffs on waste materials stricken out. *Ry R* 57:40-1 Jl 10 '15
- Slag settlers**  
Granby tapered settler. F. E. Lathe. *diags Eng & Min J* 100:270 Ag 14 '15  
Lead smelting at El Paso. H. F. Easter. *Am Inst Min E Bul* 104:1493-1506 Ag '15; Excerpts (Oil-fired settlers at El Paso) *Eng & Min J* 100:356-7 Ag 28 '15
- Slate**  
Quarrying slate for structural purposes. *Il Metal Work* 84:445-6 O 1 '15  
Use of slate as a roofing material. J. C. Taylor. *Bldg Age* 37:46 Mr '15
- Slaughtering and slaughter houses**  
Municipal abattoirs. *Munic J* 39:252-3 Ag 19 '15
- Sleeping cars**  
Ventilation of sleeping cars. T. R. Crowder. *Ry Age (Mech ed)* 89:464-6 S '15  
Wisconsin berth law annulled. *Ry Age* 59:12 Jl 2 '15
- Equipment**  
Sleeping car towel receptacle. *plan Ry Age* 59:572 S 24 '15
- Sleeping porches**  
Details of pocket window frame. W. S. Wilkin. *diags Bldg Age* 37:56-7 Ag '15
- Sleek, Edwin E.**  
Inventor, engineer, executive. C. F. Williams. *por Iron Tr R* 56:179-9 Ja 21 '15
- Slide rule**  
Barth slide rule for pulp measurement. C. G. Barth, jr. *Il Eng & Min J* 100:228 Ag 7 '15  
How to read a slide rule. *diags Power* 42:192-4 Ag 10 '15  
Logarithmic scales made from worn-out slide-rule. F. W. Salmon. *diags Mach* 22:146 O '15  
New friction head slide rule for heating work and power piping. *diags Heat & Ven* 12:50-1 Ap '15  
Quick solar reduction by slide rule. *Il Eng N* 74:267 Ag 5 '15; Same. *Eng & Min J* 100:353 Ag 28 '15  
Railway motor characteristic curves. E. E. Kimball. *Il Gen Elec R* 18:296-9 Ap '15
- Simple solution of a quadratic equation by slide rule. S. Shaw. *Eng Rec* 71:754 Je 12 '15  
Slide-rule quadratics. R. N. Miller. *Power* 42:422-3 S 21 '15  
Strength computing slide rule for reinforced concrete beams and slabs. *Il Concrete Cem* 7:38 Ag '15
- Slide valves**  
Slide valve lubrication on the Buffalo, Rochester & Pittsburgh. *diags Ry Age* 59:283-4 Ag 13 '15
- Slides.** *See Earthwork—Slides*
- Slime.** *See Ore pulp*
- Slings and litches**  
Care and use of hoisting accessories: wire rope, manila rope, hooks, chains, accessories, lubrication of wire rope, strength of slings. *Mach* 21:297-8 D '14  
Unusual rigging used to set heavy turbine parts in close quarters. F. M. Biersach. *diags Eng Rec* 73:24-5 Jl 3 '15  
Use of slings in handling loads. *diags Eng & Contr* 42:338-9 O 7 '14
- Sludge.** *See Sewage sludge*
- Sludge, Activated.** *See Sewage aeration*
- Sluice gates**  
Inclined seat eliminates sliding friction in new sluice gate. *diag Eng Rec* 72:214 Ag 14 '15  
90-in. circular gate for a 120-ft. head. *Il diags Eng N* 73:365 My 6 '15
- Smell**  
Sense of smell in insects. *Sci Am S* 79:30 Ja 30 '15
- Smelter fumes**  
Effect of sulphur dioxide on human beings. *Eng & Min J* 100:385-6 N 27 '15  
Metallurgical smoke. C. H. Fulton. *bibliog Il diags U S Bur Mines Bul* 84:1-89 '15; Excerpts. *Sci Am S* 80:310-11 N 13 '15  
Progress in the metallurgy of zinc in Great Britain. *Eng & Min J* 100:469 S 18 '15  
Report of the Selby smelter commission. *J Ind & Eng Chem* 7:41-5 Ja '15; Same cond. *Eng & Min J* 98:1075-8 D 19 '14  
Smelter-smoke litigation in California. *Met & Chem Eng* 13:208 Ap '15  
Solution of smoke, fume and dust problems by electrical precipitation. L. Bradley. *Met & Chem Eng* 13:311-14 D 1 '15  
Treating sulphurous fumes at the Mammoth smelter. A. H. Martin. *Il Met & Chem Eng* 12:769-70 D '14  
Vapor pressure of arsenic trioxide. H. V. Welch and L. H. Duschak. *Il U S Bur Mines Tech Pa* 81:1-20 '15  
*See also Electric precipitation*
- Smelteries.** *See Smelting works*
- Smelting**  
Advances in copper smelting. F. Laist. *Met & Chem Eng* 13:658 O 1 '15  
Advantages of high-lime slags in the smelting of lead ores. S. E. Bretherton. *Am Inst Min E Bul* 104:1595-9 Ag '15; Discussion. 108:2479-81 D '15  
Blast furnace vs. reverberatory. *Eng & Min J* 99:832-3 My 8 '15  
Coal-dust fired reverberatory furnaces of Canadian copper co. D. H. Browne. *diags Am Inst Min E Bul* 97:49-60 Ja '15; Same cond. *Met & Chem Eng* 13:182-4 Mr '15; Abstract. *Am Soc M E J* 37:187 Mr '15  
Copper Queen smelting works. R. H. Vail. *Il Eng & Min J* 99:1-6 Ja 2 '15  
Copper smelting in Japan. M. Bissler. *Il diags Am Inst Min E Bul* 95:2661-703 N '14; Discussion. 101:1173-4 My '15  
Copper smelting in the Caucasus. *map Eng & Min J* 99:650-3 Ap 10 '15  
Definition of smelting. *Eng & Min J* 100:531 S 25 '15  
Development of zinc smelting in the United States. G. C. Stone. *Met & Chem Eng* 13:726-7 O 15 '15  
High blast heats in Mesaba practice. W. Mathesius. *Am Inst Min E Bul* 99:539-55 Mr '15; Same cond. *Iron Age* 95:475-8 F 25 '15; Same cond. *Iron Tr R* 56:365-6, 368 F 13 '15; Abstract. *Met & Chem Eng* 12:177-8 Mr '15; Discussion. *Am Inst Min E Bul* 101:1100-7 My '15

**Smelting—Continued**

- High-lime slags in lead smelting; abstract. S. E. Bretherton. *Met & Chem Eng* 13:766-7 O 15 '15
- Improvements at Trail, B. C. Eng & Min J 99:290 F 6 '15
- Lead smelting at El Paso. H. F. Easter. *Am Inst Min E Bul* 104:1493-1506 Ag '15; Abstract. *Met & Chem Eng* 13:814 N 1 '15
- Metal loss in copper slags. F. E. Laibe. *Eng & Min J* 100:215-17, 263-3, 305-8 Ag 7-21 '15
- Newnam hearth. W. E. Newnam. *Am Inst Min E Bul* 106:2139-45 O '15; Same. *Eng & Min J* 100:628-30 O 16 '15; Excerpts. *Met & Chem Eng* 13:374 D 15 '15
- Points in the economics of zinc metallurgy. W. R. Ingalls. *Eng & Min J* 100:561-4 O 2 '15
- Progress in the smelting of Mayari ore. R. V. McKay. *Iron Age* 93:1386-9+ Je 4 '14; Same. *Iron Tr R* 55:1215-21 D 31 '14
- Pyrite smelting. E. D. Peters. *Eng & Min J* 98:1134-5 D 26 '14
- Pyritic smelting at Mount Lyell. R. Sticht. *Met & Chem Eng* 13:116-18 F '15
- Pyritic smelting; discussion. *Am Inst Min E Bul* 100:739-61 Ap '15
- Reverberatory smelting practice of Nevada consolidated copper co. *Met & Chem Eng* 13:681-2 O 1 '15
- Reverberatory smelting practice of Nevada consolidated copper co. R. E. H. Pomeroy. *diags plan Am Inst Min E Bul* 98:445-53 F '15; Abstract. *Met & Chem Eng* 13:262-4 Ap '15
- Reverberatory waste-heat boilers. L. Duncan. *Il diag Eng & Min J* 99:152-3 Ja 16 '15
- Slag- and matte-granulating devices. P. E. Barbour. *diags Eng & Min J* 99:239 Ja 30 '15
- Smelting at Anyox, B. C. Eng & Min J 100:804 N 13 '15
- Smelting at Panulillo, Chile. *Il Eng & Min J* 100:787-9 N 13 '15
- Smelting data of British Columbia copper co. F. K. Brunton. *Eng & Min J* 100:18-19 Ji 3 '15
- Smelting methods at Magistral, Durango, Mex. R. W. Bissell. *Sch Mines Q* 36:23-9 N '14
- Use of salt in zinc smelting. *Eng & Min J* 99:917-18 My 22 '15
- See also* Blast furnaces; Furnaces, Metallurgical; Metallurgy; Ore treatment; Slag settlers; Smelter fumes; Smelting works
- Cost**
- British Columbia copper co. smelter; average daily report for May, 1913. F. K. Brunton. *Am Inst Min E Bul* 103:1415-17 Ji '15; Excerpt. *Met & Chem Eng* 13:509 Ag '15
- Smelting costs at Greenwood, B. C. Eng & Min J 100:109 Ji 17 '15
- Smelting, Electric**
- Electric iron-ore smelting in Norway. *diags Elec R & W Elec'n* 67:54 Ji 10 '15
- Electric smelting for southeastern Alaska. F. C. Farnham. *Eng & Min J* 99:287 F 6 '15
- Electric smelting for southeastern Alaska. U. S. Rush. *Eng & Min J* 98:1149 D 26 '14
- Electro-thermic iron-ore smelting in Scandinavia. *Eng & Min J* 100:351-2 Ag 28 '15
- Manufacture of ferro-alloys in the electric furnace. R. M. Keeney. *U S Bur Mines Bul* 77:102-85 '14; Excerpts. *Iron Tr R* 58:717-22+, 765-7+, 862-7+, 972-5 Ap 8-15, 29, My 13 '15
- Smelting of copper ores in the electric furnace. D. A. Lyon. *diags U S Bur Mines Bul* 81:1-76 '15; Excerpt. *Sci Am S* 80:139 Ag 28 '15
- Smelting of metals in the electric furnace. D. A. Lyon and R. M. Keeney. *U S Bur Mines Bul* 77:72-101 '14
- Thermal efficiency of the electric furnace. W. M. Johnson. *Eng Soc W Pa* 31:488-98; Discussion. 31:499-509 Ji '15
- See also* Electric furnaces; Electrometallurgy
- Smelting works**
- British Columbia copper co's smelter, Greenwood, B. C. F. K. Brunton. *diags Am Inst Min E Bul* 103:1401-17 Ji '15
- Copper Queen smelting works. R. H. Vail. *Il Eng & Min J* 99:1-6 Ja 2 '15
- Copper-smelting works of North America. *Eng & Min J* 99:54 Ja 9 '15
- Cost of cars, electric locomotives, etc., for Arizona copper co.'s new smelter. *diags Eng & Min J* 99:496 Mr 13 '15
- Cost of conveyors at the Arizona copper co.'s new smelter. *diags Eng & Min J* 99:329-30 F 13 '15
- Design, construction and unit costs of the power house for the new smelter of the Arizona copper co., Ltd., Clifton, Ariz. *diags plans Eng & Contr* 42:262-5 S 18 '14
- Designing small copper smelting plants. C. C. Christensen. *Il Eng & Min J* 99:225-8 Ja 30 '15
- Equipment of Arizona smelters. J. Douglas. *Met & Chem Eng* 13:904 D 1 '15
- Power plant of the Granby co. T. Wilson. *Il plans Power* 42:2-7 Ji 6 '15; Abstract. *Eng & Min J* 100:118-15 Ji 17 '15
- Salida smelter. F. D. Weeks. *Am Inst Min E Bul* 104:1691-5 Ag '15; Excerpt (Don'ts in the designing of a smelting works). *Eng & Min J* 100:328-9 Ag 7 '15; Excerpt. *Met & Chem Eng* 13:814-15 N 1 '15
- Smelting works of the Mond nickel co. A. W. G. Wilson. *Il diags Eng & Min J* 98:1049-51 D 12 '14
- Supreme court decides against Ducktown company. *Eng & Min J* 99:1047 Je 12 '15
- Unit construction costs from the new smelter of the Arizona copper co., Ltd. E. H. Jones. *diags Am Inst Min E Bul* 91:1497-1649 Ji '14; Abstract. *Eng & Contr* 42:560-3 D 16 '14
- Zinc smelter at Langeloth. W. R. Ingalls. *diags plan Eng & Min J* 98:985-9 D 5 '14
- See also* Metallurgical plants; Smelter fumes
- Safety devices and measures**
- Accident prevention in smelting works. *Eng & Min J* 100:448 S 11 '15
- Smoke**
- Effects of fumes from lignite coal and from wood on cement brick chimneys. *Concrete Can* 5:246-7 D '14
- Metallurgical smoke. C. H. Fulton. *bibliog Il diags U S Bur Mines Bul* 84:1-89 '15; Excerpts. *Sci Am S* 80:310-11 N 13 '15
- See also* Cinders; Fuel; Locomotives—Smoke problem; Mechanical draft; Soot
- Smoke helmets**
- Rescue company no. 1 of the New York fire department. *Il Sci Am* 112:283 Mr 27 '15
- Where the smoke helmet would be invaluable: a lesson from the New York subway fire. *Il Sci Am* 112:65 Ja 16 '15
- Smoke inspection.** *See* Smoke prevention
- Smoke prevention**
- Economy in use of fuel results in elimination of dense smoke. F. M. Logan. *Eng Rec* 72:581-2 N 6 '15
- Eliminating smoke, soot and dirt in steam generation. *Il Textile World* 49:565-7 Ag '15
- German smoke abatement society. J. B. C. Kershaw. *Met & Chem Eng* 13:361-3 Ap '15
- Headroom for smokeless settings. O. Monnett. *Power* 40:885-6 D 22 '14
- How smokeless combustion is secured by the Boston Edison company. *Il diag Elec W* 66:469 Ag 28 '15
- Mechanical draft and smoke prevention. T. Tait. *Dom Eng* 73:232 N 30 '15
- Metallurgical and special furnaces. O. Monnett. *diags Power* 41:432-3 Mr 30 '15
- Metallurgical smoke. C. H. Fulton. *bibliog Il diags U S Bur Mines Bul* 84:1-89 '15; Excerpts. *Sci Am S* 80:310-11 N 13 '15
- Preventing smoke electrically. H. C. Wolf. *Il Elec W* 66:693-3 S 25 '15
- Problem of the modern city. W. F. M. Goss. *Eng Soc W Pa* 31:229-37 Mr '15
- Reconstructing existing plants. O. Monnett. *diags Power* 40:920-2 D 29 '14
- Record system in a smoke inspector's office. M. A. Rooney. *Power* 42:543-4 O 19 '15
- Reducing smoke in Pittsburgh. J. W. Henderson. *Il Power* 42:152-3 Ag 3 '15
- Return-tubular boiler furnace development. O. Monnett. *diags Power* 40:93-4 Ji 21 '14; Same. *Sci Am S* 78:394-5 D 19 '14
- Smoke abatement in house heating boilers. M. A. Rooney. *Il Heat & Ven* 12:17-20 O '15

**Smoke prevention—Continued**

Smoke abatement in Massachusetts. Power 42: 213-14 Ag 10 '15

Smoke exhaustor for the St. Paul engine house at Chicago. W. S. Lacher. *Il* diags Ry Age 58:98-9 Ja 15 '15

Smokeless locomotive operation without special apparatus. H. H. Maxfield. Ry R 57: 426-9 O 2 '15; Same cond. Ry Age (Mech ed) 89:561-2 N '15; Same cond. Power 42:491-2 O 5 '15

Solution of smoke, fume and dust problems by electrical precipitation. L. Bradley. Met & Chem Eng 18:911-14 D 1 '15

Validity of anti-smoke ordinance. A. L. H. Street. Power 42:478 O 5 '15

Washing locomotive smoke. M. D. Franey. diag plan Ry Age 59:558-60 S 24 '15; Same. Ry Age (Mech ed) 89:511-13 O '15; Same. Power 42: 561-3 O 19 '15; Same cond. Eng N 74:906-7 N 4 '15; Excerpt. Ry R 57:887-8 S 25 '15

Waste-heat boilers. O. Monnett. diags Power 41:196-7 F 9 '15; Same. Eng & Min J 99: 368-9 F 20 '15

See also Electric precipitation; Locomotives—Smoke problem

**Smoke prevention association**

10th annual convention, Cincinnati, Sept. 8-10. Power 42:493 O 5 '15

**Smoke recorder**

Smoke recorder and monitor. W. W. Strong. *Il* Power 40:912-13 D 29 '14

**Smokeless powder**

Manufacture of smokeless powder. E. C. Crossman. Sci Am 112:136 F 6 '15

Munitions of the present war. Ry R 57:373-4 S 18 '15

**Smokestacks. See Chimneys****Smudge pots. See Frost protection****Snag boats**

Shallow draft snag boat Swinomish. *Il* plans Int Marine Eng 20:500-2 N '15

Snag boats on flood rivers. D. A. Willey. *Il* Sci Am S 79:149 Mr 6 '15

**Snakes**

Garden of serpents in the Serotherapeutic institute of Brazil. J. Boyer. *Il* Sci Am 112:447 My 16 '15

Snakes and their value to the agriculturist. R. W. Shufeldt. *Il* Sci Am S 80:344-5 N 27 '15

**Snap flasks. See Foundries—Equipment and supplies****Snow**

Remarkable snowfall of the Sierra Nevada. Sci Am 113:144 Ag 14 '15

See also Snowslides

**Snow fences. See Railroads—Snow protection and removal****Snow plows**

Snow plow and life guard combined. C. M. Feist. *Il* Elec Ry J 46:832 O 16 '15

**Snow removal**

Methods introduced in New York last winter cut cost and increased speed of snow removal. J. T. Fetherston. *Il* Eng Rec 71: 640-3 My 22 '15

New York's snow removal plans. *Il* Munic J 37:827-9 D 10 '14

Removal of snow from city streets. Elec Ry J 44:1282 D 12 '14

Report on snow removal work in the city of New York. Good Roads n s 9:254 Je 19 '15

Snow plows on motor trucks clear New York streets. *Il* Eng Rec 71:215 F 13 '15

Snow removal. Elec Ry J 44:1248-9 D 5 '14

Snow removal conference held in Philadelphia April 16 and 17, 1914: report of the committee on resolutions; with discussion. Am Soc M E J 37:92-5 F '15; Same. Sci Am S 79:159-60 Mr 6 '15

Snow removal in Montreal. *Il* Elec Ry J 44:1807-8 D 12 '14

Snow removal in New York. *Il* Munic J 38: 805-7 Je 10 '15

Snow-removal plan for New York city. Eng N 72:1810-11 D 31 '14

Snow removal principles: summary of papers and discussions at Philadelphia conference on snow removal. *Il* Munic J 37:830-2 D 10 '14

See also Railroads—Snow protection and removal

**Snow surveys**

Snow survey provides basis for close forecast of watershed's yield. J. E. Church, jr. *Il* Eng Rec 71:494-5 Ap 17 '15

**Snowslides**

Fatal snowslide at Britannia copper co.'s mines. *Il* Eng & Min J 99:628 Ap 3 '15

**Soap**

Contributions of the chemist to the art of soapmaking. M. H. Ittner. J Ind & Eng Chem 7:935-6 N '15

South American market for soap. U S Sp Cons Rep 66:1-16 '15

Tincture of white soap. Sci Am S 79:211 Ap 3 '15

**Social centers**

John C. Proctor recreation center, Peoria, Illinois. *Il* plans Arch Rec 37:116-31 F '15

**Social work**

See also Social centers; Welfare work in industry

**Societies**

Society bookkeeping; standardized method for recording and checking the accounts. Metal Ind n s 12:233-5 Je '15

**Societies, Engineering. See Engineering societies****Society for electrical development**

Annual meeting, New York, May 11. Elec W 65:1265-6 My 15 '15

Work of Society for electrical development. J. M. Wakeman. Elec W 65:1530 Je 12 '15

**Society of automobile engineers**

Abstracts of the papers presented on the steamer Noramic. Horseless Age 35:797-806 Je 16 '15

Committee reports and papers. Automobile 32: 1057-61, 1088-90, 1103-5 Je 17-24 '15

Mid-west S. A. E. section in Chicago. diags Automobile 33:736-9 O 21 '15

Papers and the discussions at the professional sessions. Horseless Age 35:827-30 Je 23 '15

S. A. E. gas-electric committee reports. diags Automobile 32:401-4 Mr 4 '15

S. A. E. winter session produces six new standards. pors Automobile 32:83-6 Ja 14 '15

Winter meeting, New York. Horseless Age 35: 58-74, 110-13 Ja 13-20 '15

**Standards committee**

S. A. E. standards work under new rules. *Il* Automobile 32:616-17 Ap 8 '15

**Society of chemical industry**

Annual meeting, Manchester. Engineer 120:91-2 Jl 23 '15

Annual meeting, Manchester, July 14-16. Met & Chem Eng 18:543-6 S 1 '15

Meeting of New York section, Nov. 19. Met & Chem Eng 18:921-3 D 1 '15

**Society of naval architects and marine engineers**

22d annual meeting, Dec. 10-11, 1914. Int Marine Eng 20:8-22 Ja '15

22d general meeting, New York city, Dec. 10-11, 1914. Eng N 72:1231-2 D 17 '14

**Society to promote the science of management**

Labor problems in scientific management. Iron Age 94:1369-72 D 10 '14

**Socket appliances. See Electric apparatus and appliances****Soda**

Contributions of the chemist to the soda industry. F. R. Hazard. J Ind & Eng Chem 7: 281-2 Ap '15; Abstract. Met & Chem Eng 13:285 My '15

Electrolytic cell patents for the production of caustic soda and chlorine. diags Met & Chem Eng 13:815-16 N 1 '15

Feasibility of continuous causticizing. *Il* Met & Chem Eng 13:514-15 Ag '15

Relative value of soda and soda ash. G. B. Morris. Mach 22:61 S '15

**Sodium**

Birth-time of the world: methods of determining its age. J. Joly. Sci Am S 79:77-9 Ja 30 '15

**Sodium—Continued**

- Fluoboric and fluosilicic acids in the qualitative analysis of sodium. F. C. Mathers and others. *Am Chem Soc J* 37:1515-17 Ja '15
- Sea-salt and geologic time. H. S. Shelton. *Sci Am S* 79:79-80 Ja 30 '15
- Sodium carbonate**  
Hydrolysis of sodium carbonate in solution. F. C. Frary and A. H. Nietz. *Am Chem Soc J* 37:2268-73 O '15
- Molecular weight of sodium carbonate and the atomic weight of carbon referred to silver and bromine. T. W. Richards and C. R. Hoover. *Am Chem Soc J* 37:95-107 Ja '15
- Sodium chloride.** See Salt
- Sodium ethylate**  
Reactions of sodium ethylate with methyl iodide in absolute ethyl alcohol at 25°. H. C. Robertson, Jr. and S. F. Acree. *Am Chem Soc J* 37:1902-9 Ag '15
- Reinterpretation of the reactions of sodium methylate and sodium ethylate with 1, 2-dinitrobenzene and 1, 2, 4-dinitrochlorobenzene, and 1, 2, 4-dinitrobenzene. S. F. Acree. *Am Chem Soc J* 37:1909-14 Ag '15
- Sodium formate**  
Rate of reduction of mercuric chloride by sodium formate. G. A. Linhart. *Am Chem Soc J* 37:70-6 Ja '15
- Sodium hydrazide**  
Anhydrous hydrazine; electrolysis of a solution of sodium hydrazide in anhydrous hydrazine. T. W. B. Welsh. *diag Am Chem Soc J* 37:497-508 Mr '15
- Sodium hydroxide**  
Hydrogen potentials of sodium hydroxide solutions and the dissociation constant of water. F. C. Frary and A. H. Nietz. *Am Chem Soc J* 37:2268-8 O '15
- Sodium malonic ester**  
Study of the reactions of sodium malonic ester. C. L. Jackson and F. C. Whitmore. *Am Chem Soc J* 37:1522-37, 1915-34 Je, Ag '15
- Sodium methylate**  
Reinterpretation of the reactions of sodium methylate and sodium ethylate with 1, 2-dinitrobenzene, and 1, 2, 4-dinitrochlorobenzene and 1, 2, 4-dinitrobenzene. S. F. Acree. *Am Chem Soc J* 37:1909-14 Ag '15
- Sodium nitrate.** See Saltpeter, Chile
- Sodium phthalate**  
Acid potassium and acid sodium phthalates as standards in acidimetry and alkalimetry. W. S. Hendrixson. *Am Chem Soc J* 37:2352-9 O '15
- Sodium salts**  
Use of sodium salts in the purification of clays and in the casting process. A. V. Bleininger. *il diag U S Bur Stand Tech Pa* 51:1-40 '15
- Sodium silicate**  
Silicate of soda in dyeing cotton. A. Bolis. *Textile World* 49:117-19 Ap '15
- Sodium sulphate**  
Molecular weight of sodium sulfate and the atomic weight of sulfur. T. W. Richards and C. R. Hoover. *Am Chem Soc J* 37:108-13 Ja '15
- Sofas**  
Cabinet work for the carpenter. F. D. Otter. *diag Bldg Age* 37:49-50 N '15
- Soil analysis**  
Amino-acid nitrogen of soil and the chemical groups of amino acids in the hydrolyzed soil and their humic acids. R. S. Potter and R. S. Snyder. *Am Chem Soc J* 37:2219-27 S '15
- Colorimetric determination of phosphorus in soil extracts. C. H. Miller and F. A. Gangler. *J Ind & Eng Chem* 7:819 JI '15
- Comparison of silicates and carbonates as sources of lime and magnesia for plants. W. H. MacIntire and L. G. Willis. *il J Ind & Eng Chem* 6:1005-8 D '14
- Determination of ammonia in soils. R. S. Potter and R. S. Snyder. *il J Ind & Eng Chem* 7:221-6 Mr '15
- Determination of nitrates in soil. R. S. Potter and R. S. Snyder. *J Ind & Eng Chem* 7:868-4 O '15
- Determination of nitric nitrogen in soils. E. R. Allen. *diag J Ind & Eng Chem* 7:521-9 Je '15
- Determination of soil carbonates; a modification. W. H. MacIntire and L. G. Willis. *il J Ind & Eng Chem* 7:227-8 Mr '15
- Determination of sulfates in soils. F. E. Brown and E. H. Kellogg. *J Ind & Eng Chem* 7:686-7 Ag '15
- Effect of grinding the soil on its reaction as determined by the Veitch method. F. E. Brown and H. W. Johnson. *J Ind & Eng Chem* 7:776-7 S '15
- Method for the determination of the immediate lime requirements of soils. W. H. MacIntire. *il J Ind & Eng Chem* 7:864-7 O '15
- Modified kjeldahl flask for determining soil nitrogen. H. A. Noyes. *il Am Chem Soc J* 36:2641-2 D '14
- Presence of proteoses and peptones in soils. E. H. Walters. *J Ind & Eng Chem* 7:860-3 O '15
- Shaker for the mechanical analysis of soils. F. Ward. *J Ind & Eng Chem* 6:1038 D '14
- Strength of nitric acid, period of extraction, and ignition as affecting the gravimetric determination of phosphoric acid in soils. O. L. Brauer. *J Ind & Eng Chem* 6:1004-5 D '14
- Soil bacteriology**  
Tillage of the soil by minute living organisms. *Sci Am S* 80:142 Ag 28 '15
- Soil millers**  
Milling the soil; improving on the old-fashioned plow. L. W. Ellis. *il Sci Am* 112:436 My 8 '15
- Soil moisture**  
Determining the critical moisture content of soils. R. O. E. Davis. *J Ind & Eng Chem* 6:1008-10 D '14
- See also Drainage
- Soil pressure.** See Earth pressure
- Soil testing**  
Specifications for uniform screens for soil tests. *Eng N* 73:287 F 11 '15
- Soils**  
Cleaning soils for microscopic examination. W. H. Fry and J. A. Cullen. *J Ind & Eng Chem* 7:40-1 Ja '15
- Comparison of silicates and carbonates as sources of lime and magnesia for plants. W. H. MacIntire and L. G. Willis. *il J Ind & Eng Chem* 6:1005-8 D '14
- Engineering properties of soils. R. O. E. Davis. *J Ind & Eng Chem* 7:422-5 My '15
- Lithium in soils. L. A. Steinkoenig. *J Ind & Eng Chem* 7:425-6 My '15
- Loss of nitrogen and organic matter in cultivated Kansas soils and the effect of this loss on the crop-producing power of the soil. C. O. Swanson. *J Ind & Eng Chem* 7:529-32 Je '15
- See also Alkali soils; Clay; Drainage; Fertilizers and manures; Foundation soils; Irrigation; Soil analysis; Soil bacteriology; Soil moisture
- Soils, Foundation.** See Foundation soils
- Solar electricity.** See Electricity, Solar
- Solar heat.** See Sun
- Solar heaters**  
Inexpensive solar heating plants. *Metal Work* 82:758 D 11 '14
- Solar-magnetism.** See Magnetism, Solar
- Solar power plants**  
Shuman-Boys sun-power plant at Meadi, Egypt. *Eng & Min J* 100:156 JI 24 '15
- Utilization of solar energy; abstract. A. S. H. Ackermann. *Am Soc M E J* 37:661 N '15
- Solar radiation**  
New evidence on the intensity of radiation outside the atmosphere. C. G. Abbot, F. E. Fowle and L. B. Aldrich. *Sci Am S* 80:258-9 O 23 '15
- Solder and soldering**  
Aluminum solder. *Elec R & W Elec'n* 67:670-1 O 9 '15
- Convenient electric soldering iron. J. N. Graham. *diag Elec Ry J* 46:68 JI 10 '15
- Gas furnace for heating soldering irons. R. H. Parsons. *plan Elec Ry J* 46:24 JI 8 '15

**Solder and soldering—Continued**

- Micro reactions of soldering. J. Scott. *Il Dom Eng* 73:108-4 O 28 '15  
 Monarch electric soldering iron. *Il Elec R & W Elec'n* 67:635 O 2 '15  
 Soldering and brazing aluminum. *Mach* 21:236-8 D '14  
 Soldering commutators and rotors. G. Fox. *diags Power* 42:328-9 S 7 '15  
 Various constructions of charcoal fire pots. *diags Metal Work* 84:649-51 N 19 '15  
 Working aluminum at 400 degrees fahrenheit. *Il Horseless Age* 36:373 O 15 '15  
*See also Welding*

**Solenoid brake. See Brakes****Solenoids**

- Solenoid and electromagnet windings. G. L. Hedges. *Am Inst E E Pro* 34:2595-614 N '15

**Solidago**

- Volatile oils of the genus solidago. H. R. Miller and M. H. Eskew. *Am Chem Soc J* 36:2538-41 D '14

**Soluble ferments. See Enzymes****Solution (chemistry)**

- Absorption and the surface tensions of aqueous solution of homologous fatty acids and alcohols. M. Neidle. *Am Chem Soc J* 37:513-15 Mr '15  
 Anhydrous hydrazine as a solvent. T. W. B. Welsh and H. J. Broderson. *diags Am Chem Soc J* 37:316-24 Ap '15  
 Conductivity and viscosity of solutions of electrolytes in formamid. P. B. Davis, W. S. Putnam and H. C. Jones. *il diags J Fr Inst* 180:567-601 N '15  
 Determination of the solubility of silver nitrite and its degree of dissociation in a saturated solution. H. J. M. Creighton and W. H. Ward. *Am Chem Soc J* 37:2383-8 O '15  
 Distribution of an electrolyte between water and some second solvent and its dissociation constant in aqueous solution. H. J. M. Creighton. *J Fr Inst* 180:63-74 JI '15  
 Effect upon their solution tensions of dissolving the alkali and alkali earth metals in mercury, and the constitution of such solutions. G. M. Smith. *Am Chem Soc J* 37:76-80 Ja '15  
 Entropy of vaporization as a means of distinguishing normal liquids. J. H. Hildebrand. *Am Chem Soc J* 37:970-8 My '15  
 Hydrogen- and hydroxyl-ion activities of solutions of hydrochloric acid, sodium and potassium hydroxides in the presence of neutral salts. H. S. Harned. *diag Am Chem Soc J* 37:2460-82 N '15  
 Hydrogen potentials of sodium hydroxide solutions and the dissociation constant of water. F. C. Frary and A. H. Niets. *Am Chem Soc J* 37:2268-8 O '15  
 Ionic hydration and transference numbers of caesium chloride. R. W. Washburn and E. B. Millard. *Am Chem Soc J* 37:694-9 Ap '15  
 Measurement of vapor pressure lowering by the air saturation method. E. W. Washburn and E. O. Heuse. *il diags Am Chem Soc J* 37:309-21 F '15  
 Method for the calculation of the hydration of the ions at infinite dilution, and the ideal diffusion coefficient as applied to the hydro-diffusion of electrolytes. G. M. Smith. *Am Chem Soc J* 37:722-33 Ap '15  
 Relative solubility of certain silver salts. A. E. Hill. *Am Chem Soc J* 37:510-13 Mr '15  
 Solubility curves of salt hydrates: calcium nitrate. H. S. Taylor and W. N. Henderson. *Am Chem Soc J* 37:1688-94 JI '15  
 Solubility of certain difficultly soluble silver salts. A. Thiel. *Am Chem Soc J* 37:508-10 Mr '15  
 Solubility of magnesium carbonate in natural waters. R. C. Wells. *Am Chem Soc J* 37:1704-7 JI '15  
 Solubility of mixtures of sodium and potassium chlorides in solutions of hydrochloric acid. W. B. Hicks. *diag Am Chem Soc J* 37:844-7 Ap '15  
 Studies of the vapor pressure of solutions; a static method for the determination of the difference between the vapor pressure of solution and that of solvent. J. C. W. Fraser and B. F. Lovelace. *diags Am Chem Soc J* 36:2439-49 D '14

- Vapor pressures of certain alcoholic solutions. O. F. Tower and A. F. O. Germann. *Il Am Chem Soc J* 36:2449-56 D '14  
 What is a normal solution? D. M. Liddell. *Power* 42:448 S 28 '15

*See also* Boiling points; Colloids; Concentration cells; Electrolysis; Electrolytes; Osmosis

**Solutions, Alkalimetric. See Alkalimetric solutions****Solutions, Solid**

- Constitution of the iron-carbon alloys: a chemical theory to explain the different properties by the existence of ferrated carbides. G. Auchy. *Iron Age* 95:50-1 Ja 7 '15  
 Heat of formation of solid solutions. H. W. Foote and B. Saxton. *Am Chem Soc J* 36:1704-8 Ag '14

**Solutions, Standardized. See Volumetric analysis****Solutions, Supersaturated**

- Rhythmical precipitation of ferrous ferricyanide and ferrous hydroxide in jelly. H. J. M. Creighton. *Il Am Chem Soc J* 36:2357-60 N '14

**Soot**

- Results with mechanical soot blowers on boilers. A. J. Fisher. *Power* 42:314 Ag 31 '15  
 Schutte & Koerting soot conveyor. *diag Power* 41:876 Je 29 '15  
 Soot blowers as adapted for use on economizers. *diag Power* 42:184-5 Ag 10 '15  
 Soot removal. H. R. Blessing; J. Priefer. *Power* 41:615-16 My 4 '15  
 Tests of hand and mechanical soot blowers. A. W. Conklin. *diag Power* 42:48-50 JI 13 '15  
 Vulcan vertical water-tube boiler cleaner. *diags Power* 42:323 Ag 17 '15

**Sound**

- Instance of the parabolic reflector reversed; Galveston sea wall as a sound reflector. L. F. J. Zerbe. *Sci Am* 113:235 S 11 '15  
 Zones of silence. W. J. L. Kiehl. *Sci Am* 112:360 Ap 17 '15

*See also* Acoustics, Architectural; Noise; Phonetics; Radiation

- Sound wheel, a novel wireless detector. *Il Sci Am* 112:384 Ap 24 '15

**Sounding**

- Electrical sounding. H. R. Gilson. *diags Elec R & W Elec'n* 66:1002-3 My 29 '15; Abstract. *Eng M* 49:764 Ag '15

**Soup kitchens**

- World's largest soup kitchen. *Sci Am* 112:329 Ap 3 '15

**South****Industries and resources**

- Industrial resources and opportunities of the South. A. D. Little. *J Ind & Eng Chem* 7:373-9 My '15; Same cond. *Met & Chem Eng* 13:231-2 My '15  
 Iron, steel and coal in Dixie. H. S. Chamberlain. *Iron Tr R* 56:176-8+ Ja 21 '15

**South Africa****Commerce**

- American pipe and fittings in South Africa. *Iron Age* 96:1230-1 N 25 '15

**South America**

- South America as a field for American engineers. B. Willis. *Eng Rec* 70:620 D 5 '14

*See also* Latin America

**Commerce**

- Careful and intelligent cultivation necessary for extension of our commerce. C. Townley. *Elec W* 65:1136-7 My 1 '15  
 Commercial opportunities in Latin-America. H. H. Darville. *Il Metal Work* 83:553-6 Ap 9 '15  
 Consular recommendations on South American trade. U S Bur For & Dom Com misc ser 20:1-28 '15  
 Electrical markets in Brazil. H. N. Douthitt. *Elec W* 65:1488-9, 1593 Je 5, 19 '15  
 How to sell to Latin-America. A. Del Mar. *Il Eng M* 50:341-56 D '15  
 Machinery trade with South America. J. A. Massel. *Iron Age* 96:1128-9 N 11 '15



**South America—Commerce—Continued**

- South American business and America's opportunity. W: T. Taylor. Elec W 65:206 Ja 23 '15  
 South American market for jewelry and silverware. U S Sp Cons Rep 70:1-28 '15  
 South American market for soap. U S Sp Cons Rep 66:1-16 '15  
 South American markets for machine tools. B. O. Hough. Mach 21:545-6 Mr '15  
 South American trade conditions. R. G. Betts. Mach 21:502 F '15  
 Trade opportunities in South America. Elec W 64:1172-3 D 12 '14  
 West coast business. M. R. Lamb. II Eng & Min J 99:423-7 Mr 6 '15

**Industries and resources**

- Coal fields of South America. W. G. Burroughs. map Colliery 35:552-3, 643-4; 36:30-1, 153-5 My, J1-Ag, O '15  
 Fuel conditions in South America. J. W. Hardy. Ry Age 58:1056-7 My 21 '15  
 South America in 1914; mining industry. maps Eng & Min J 99:125-30 Ja 9 '15

**South Dakota**

See also Mines and mineral resources—South Dakota

**South Orange, New Jersey****Water supply**

- Design features of the new water works at South Orange, N. J. II Eng & Contr 43:519-20 Je 9 '15

**Southampton, Long Island****Parrish museum**

- Parrish museum, Southampton, Long Island. C: C. May. II plans Arch Rec 38:524-39 N '15

**Southern California Edison company**

- Annual report, 1914. Elec W 65:1032 Ap 24 '15

**Southern Pacific railroad**

- Contact system of the Southern Pacific company Portland division. F. Lebenbaum. II diags map Am Inst E E Pro 34:1295-1308 Je '15; Abstract. Elec Ry J 46:57-8 J1 10 '15  
 How a railway helps the farmer to produce bigger and better crops. H. A. Hinshaw. Elec Ry J 46:559 S 18 '15  
 Mr. Kruttschnitt testifies in dissolution suit. Ry R 56:344-5 Mr 13 '15  
 Railroad built around burning tunnel in three weeks. II Eng Rec 71:797 Je 26 '15  
 Thirty-first annual report. map Ry Age 59: 789-90, 889-42 O 29 '15

**Southern railway company**

- New terminal for the Southern at Birmingham, Ala. II diags Ry Age 59:743-6 O 22 '15  
 Twenty-first annual report. map Ry Age 59: 723-4, 781-4 O 22 '15

**Southern textile association**

- Meeting at Greenville, S. C. Textile World 50:157-65 N '15

**Southwark-Harris oil engine. See Diesel engines****Southwest**

- Resources and possibilities of chemical industry in the Southwest. E. Baruch. Met & Chem Eng 13:604-3 S 15 '15

**Southwestern electrical and gas association**

- 11th annual convention, Galveston, Tex., May 19-22. Am Gas Light J 102:375, 378-9 Je 14 '15

- 11th annual convention, Galveston, Tex., May 19-22. Elec Ry J 45:1025-30 My 29 '15

- 11th annual convention, Galveston, Tex., May 19-22. Elec R & W Elec'n 66:906-8 My 29 '15

- 11th annual convention, Galveston, Tex., May 19-22. Elec W 65:1435-7 My 29 '15

**Soy beans**

- Carbohydrates and the enzymes of the soy bean. J. P. Street and E. M. Bailey. J Ind & Eng Chem 7:853-8 O '15

- Studies on enzyme action: the lipase of soy beans. K. G. Falk. Am Chem Soc J 37:649-53 Mr '15

**Spacing tables**

- Spacing table in the structural shop: equipment in Fort Pitt bridge works. G: P. Thomas. II Iron Age 95:139-41 Ja 14 '15

**Spain****Industries and resources**

- Spanish potash deposits. Eng & Min J 100: 262 Ag 14 '15

**Navy**

- First Spanish submarine. Sci Am S 80:229 O 9 '15

**Spanish America. See Latin America****Spark plugs**

- Electrical equipment of automobiles. P. M. Heldt. diags Horseless Age 34:918-20 D 23 '14  
 Spark-plug ignition systems. A. H. Israel. diags Power 41:258-60 F 23 '15  
 Testing plant for spark plugs. II Automobile 31:1075 D 10 '14

**Specific gravity**

- Formulas for specific gravity, etc., of alloys. W. L. Tryon. Foundry 43:222a Je '15  
 Pulp constants, with tables to facilitate tonnage calculations for pulps of all usual solution and dry slimes specific gravities. G. H. Clevenger, H. W. Young and T. N. Turner. Eng & Min J 98:1079-94 D 19 '14  
 Specific gravity—its determination for tars, oils and pitches. J: M. Weiss. II J Ind & Eng Chem 7:21-4 Ja '15

**See also Hydrometers****Specific heat**

- Absolute zero. S. Dushman. Gen Elec R 18: 239-43 Ap '15  
 Specific heat and heat of fusion of ice. H. C. Dickinson and N. S. Osborne. diags U S Bur Stand Bul 12:49-81 O 28 '15; Abstracts. J Fr Inst 179:489-91 Ap '15; Power 41:565 Ap 27 '15; Am Soc M E J 37:294-5 My '15  
 Specific heat of copper in the interval 0° to 50° C. D. R. Harper. II U S Bur Stand Bul 11:259-318 Mr 1 '15  
 Specific heat of superheated steam at pressures from 8 to 20 atmospheres, and from temperature of saturation to 380 deg. cent.; abstract. O. Knoblauch and A. Winkhaus. Am Soc M E J 37:409-10 J1 '15

**Specifications**

- Alternate specifications for public work are legal. D. T. Pierce. Eng N 74:1048-50 N 25 '15  
 Elements of specifications. M. B. Smith. Power 42:770-3 N 30 '15  
 Fifty-three standards considered by American society for testing materials. Iron Tr R 57:37-48 J1 '15  
 Relation of tests and specifications to the uses of materials. B: Brooks. Munic J 39: 810-11 N 25 '15  
 Specification fends. Eng Rec 70:677-8 D 19 '14  
 Writing specifications. D. S. Kimball. Power 42:266-7 Ag 24 '15

See also Standards, Engineering; also subdivision Specifications under names of subjects, e. g. Bridges—Specifications; Coal—Specifications; Rails—Specifications; Steel—Specifications

**Spectacles**

- Glasses for protecting the eyes from infra-red rays. W. W. Coblenz. J Fr Inst 179: 579-80 My '15  
 Report on colored glasses for eye protection. F: W. King. Iron Tr R 56:727 Ap 8 '15  
 Shooting spectacles. Dr. Schanz. Sci Am 112: 629 Je 26 '15

**See also Goggles****Spectrometers**

- X-ray spectrometer for the study of the properties of crystals. diag Sci Am S 79:19 Ja 9 '15

**Spectrum**

- Controlling infra-red emission. W. W. Coblenz. Elec W 66:1155-6 N 20 '15  
 See also Infra-red rays; Radioactivity; Ultra-violet rays

**Spectrum analysis**

- Interference measurements of wave lengths in the iron spectrum. (2851-3701). K. Burns and W. F. Meggers. U S Bur Stand Bul 12: 179-208 N 8 '15; Abstract. J Fr Inst 180:375-6 S '15

**Speech***See also Phonetics***Speed shifter**Speed shifter of new type. *Il* Iron Tr R 57:272 Ag 5 '15**Speed variation**New type of speed changing gear. *Il* Iron Age 96:244 J1 29 '15Quick speed changes in new drill press. *Il* Automobile 32:122 Mr 4 '15Records of speed variation. F. B. Steele. *Il* Elec W 65:1687-8 Je 26 '15Solution of speed reduction. *diag* Mach 21:746-7 My '15Turbine speed reduction gear. *Il* *diags* Engineer 120:316-16 O 1 '15Turbo-reduction gear. *Il* *diag* Power 41:887 Je 29 '15**Speedometers**Speedometers and other indicating instruments at the show. H. H. Brown. *Il* Horseless Age 35:22-3 Ja 6 '15Van Sicken uses air principle. *Il* Automobile 33:287 Ag 12 '15**Speedways**Adapting an old racetrack to automobile racing. *Il* Eng N 74:603-4 S 23 '15America's first concrete speedway. Minneapolis. *diag* Automobile 33:434 S 2 '15Building a two-mile speedway in six weeks. *Il* Wood Eng Rec 71:686-7 My 29 '15; Abstract (Wood-floor speedway). Eng M 49:934 S '15Building Twin City concrete automobile racetrack. *Il* *diag* Eng N 74:806-8 O 21 '15

Concrete-paved automobile racetrack, St. Paul, Minn. Eng N 74:233 J1 29 '15

Diagrammatic plan of the Sheepshead Bay speedway. Horseless Age 36:343 S 1 '15

Motor race-track at Chicago. *Il* *diags* plan Eng N 74:488-91 S 9 '15New York speedway. *Il* map Automobile 32:664-5 Ap 15 '15Rush construction at Sheepshead Bay. *Il* Automobile 32:1067 Je 17 '15Sheepshead Bay motor racetrack. *Il* *diags* Eng N 74:337-40 Ag 10 '15Sheepshead Bay speedway officially announced. *Il* Horseless Age 35:487-8 Ap 14 '15Sheepshead Bay two-mile speedway scientifically designed for high velocities. *Il* *diags* Eng Rec 71:739-40 Je 12 '15Test automobiles in Detroit on artificial hill. *Il* Eng Rec 72:350 S 18 '15

\$250,000 speedway for Louisville. Automobile 32:354-5 Ag 19 '15

2-mile board speedway for Chicago. plan Automobile 31:1137 D 17 '14

2-mile board speedway for Chicago. plan Automobile 31:1137 D 17 '14

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2-mile board speedway for Chicago. plan Automobile 31:1137 D 17 '14

**Spiegeleisen**

Operation of spiegeleisen blast furnaces. H. Thaler. Iron Age 94:1398-9 D 17 '14

**Spikes (railroad)**Results with five years' use of screw spikes on the D. L. & W. R. R. G. J. Ray. *Il* Ry R 56:424-30 Mr 27 '15; Same cond. Ry Age 58:839-42 Ap 16 '15; Same cond. Eng & Contr 43:450-2 My 19 '15; Excerpts. Eng Rec 71:430-1 Ap 8 '15; Abstract. Eng M 49:276-9 My '15; Summary. Eng N 73:690-1 Ap 8 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

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Screw spikes. Ry Age 58:833-4 Ap 16 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

Screw spikes. Ry Age 58:833-4 Ap 16 '15

## Springfield, Massachusetts

## Public buildings

Public comfort station now under construction, at a cost of twenty-four thousand dollars. H. L. Sprague. *Il plan* Munic J 38:218-19 F 18 '15

## Water supply

Springfield water-works. *Il Eng* N 74:406-9, 443-6 Ag 26-S 2 '15

## Springfield, Ohio

## Politics and government

Commission and city manager forms of government. H. H. Rumble, R. W. Peatross and J. E. Burke. *Munic Eng* 49:55-6 Ag '15

## Springs

Using volcanic steam for the production of electrical energy. *Il Sci Am* 112:97-8 Ja 30 '15

See also Mineral waters

## Springs (mechanism)

Automatic spring forming machine. *Il Iron* Age 96:929 O 21 '15

Characteristics of plate springs. G. S. Chiles. *Il Ry Age* (Mech ed) 89:161-3, 219-22, 340-3, 392-5 Ap-May, JI-Ag '15

Design of steel passenger equipment. V. W. Zilen. *Ry Age* (Mech ed) 89:515-18 O '15

Helical springs for street cars. *Elec Ry J* 46:409-10 S 4 '15

Master blacksmiths' convention; discussion of spring making and repairing. *Il Ry Age* (Mech ed) 89:474-5 S '15

Partial and total deflections of leaf springs en masse. D. Landau and A. Golden. *Horseless Age* 35:104-7, 153-4, 447-9 Ja 20-27, Mr 31 '15

Science in spring manufacture. A. L. Clayden. *Il Automobile* 32:835-40 My 13 '15

Spring forming and hardening machine. *Il Iron* Age 95:1164-5 My 27 '15

Universal elliptic spring forming machine. *diags Ry Age* (Mech ed) 89:593 N '15

Wire springs. E. R. Morrison. *diags Mach* 21:558-60 Mr '15

See also Automobiles—Springs; Locomotives—Springs; Watch springs

## Springs, Automobile. See Automobiles—Springs

## Sprinkler systems

Combined heating and sprinkler system for a factory building; Wheelock, Lovejoy & co., Cambridge, Mass. C. L. Hubbard. *Il plans* Heat & Ven 12:13-17 O '15

## Sprinklers

Fire protection for the factory. *Il Ind Eng* 15:90-4 S '15

## Spruce

Manufacture of ethyl alcohol from wood waste; the hydrolysis of white spruce. F. W. Kressmann. *J Ind & Eng Chem* 7:920-2 N '15

## Square (instrument)

Roof framing with the steel square. D. P. Barry. *Bldg Age* 37:45-6 O '15

Roof framing with the steel square. *Il Bldg* Age 37:45-6 N '15

Story of the combination square. L. S. Starrett. *Mach* 21:360 Ja '15

Testing a square. G. A. Remacle. *diag Mach* 22:81-2 S '15

## Stables

Concrete floors for stables. L. C. Wason. *Concrete Cem* 6:42-3 Ja '15

Construction of sanitary mangers in dairy barn at Troy, Pa. *Il diags* Concrete Cem 6:104-6 F '15

Frame barn of a northwestern farmer. *Il plan* Bldg Age 37:25-6 Ap '15

Heating and ventilating stables and garages. C. L. Hubbard. *diags Dom Eng* 72:168-70 Ag 7 '15

Round dairy barn of hollow tile. W. H. Frud-den. *Il plans* Bldg Age 37:27-8 Je '15

Sheet metal in farm buildings. *diags plan* Metal Work 83:181-2+ Ja 29 '15

Ventilation of dairy barns. J. L. Shawver. *Bldg Age* 37:62 N '15

## Stacks. See Chimneys

## Stadia

Design and construction features of the Palmer memorial stadium, Princeton, N. J. *Il diags plan Eng & Contr* 43:472-5 My 26 '15

Palmer memorial stadium at Princeton university. *Il diags plan Eng* N 72:1184-7 D 10 '14

San Diego's municipal stadium. F. A. Rhodes. *Il plan Eng* N 74:577-80 S 23 '15

## Stadia measurements

Account of micrometers for measuring distances. J. Watt. *Eng* N 73:471 Mr 11 '15

Examples of stadia surveying and its broader uses with special reference to preliminary hydraulic surveys. W. B. Saunders. *Eng & Contr* 43:570-2 Je 30 '15

Long stadia sights. *Eng* N 73:990-1 My 20 '15

## Stadiagraph

Ayerll stadiagraph. *diag Eng* M 49:sup4 Ap '15

## Staff system. See Railroads—Signals

## Stage lighting

Mobile color and stage lighting. B. Jones. *Il plan Elec* W 66:245-9, 294-7, 346-9, 407-9, 454-6 JI 81-Ag 28 '15

## Staging. See Scaffolding

## Stairs. See Stairways

## Stairways

Cleveland bases stairway regulations on studies. *Eng Rec* 72:260 Ag 28 '15

Construction of a platform stairway. *diags Bldg Age* 37:33-5 Ja '15

Disappearing stairway. C. A. Byers. *Il Bldg* Age 37:53-4 JI '15

Modern schoolhouse. W. H. Kilham. *Il plans* Brickb 24:39-42 F '15

Stairways in houses of moderate cost. J. T. Fallon. *Il plans* Brickb 24:111-14, 159-63, 193-6 My, JI-Ag '15

See also Railings

## Stairways, Concrete

Architectural effects secured in Glens Falls arch bridge over Hudson river. *Il diags Eng* Rec 72:574-6 N 6 '15

Building reinforced-concrete steps without forms. R. C. Hardman. *diag Eng* N 73:731 Ap 15 '15

## Stairways, Moving. See Moving stairways

## Stamp mills

Improved form of cam for stamp mills. A. B. Foote. *diag Am Inst Min E Bul* 96:2765-6 D '14; Same. *Eng & Min J* 98:1046 D 12 '14

Notes on Homestake metallurgy; stamp milling; analysis of lost time; cost. A. J. Clark. *Il Am Inst Min E Bul* 103:1382-7 JI '15

Stamp milling in 1914. H. A. Megraw. *Eng & Min J* 99:397-8 Ja 9 '15

See also Crushing machinery; Gold milling; Metallurgy; Ore treatment

Standard documents. W. S. Parker. *Am Inst Arch J* 3:300-3, 346-51, 388-92 JI-S '15

## Standards. See Units

Standards, Bureau of. See United States—Standards, Bureau of

Standards, Electric. See Electric standards

## Standards, Engineering

Engineering standards committee annual meeting. *Engineer* 120:116, 118 JI 30 '15

Fifty-three standards considered by American society for testing materials. *Iron Tr R* 57:37-48 JI 1 '15

1915 U. S. standard schedule of flanged fittings and flanges. *Eng & Min J* 99:1121 Je 26 '15; Same. *Power* 41:782 Je 8 '15

Relation of standards to the development of engineering. W. S. Stratton. *Am Soc M E J* 37:38-40 Ja '15

Results of factory standardization. C. B. Auel. *Il diags* Iron Tr R 57:125-30 JI 15 '15; Abstracts. *Iron Age* 94:1250-2 D 3 '14; *Ind Eng* 14:458-60 D '14; *Am Soc M E J* 37:13-15 Ja '15; Discussion. 37:15-16 Ja '15

See also Electric standards; also subdivision Standards under names of subjects, e. g. Automobiles—Standards; Gas—Standards; Metallurgy—Standards; Railroads—Standards

**Standpipes**

Coating of standpipes at Reading, Mass., and Baltimore, Md. F. C. Perkins. *Il Eng & Contr* 44:32 J1 14 '15

Design and construction of the new standpipe of the Youngstown, Ohio, water works. N. E. Hawkins. *Il diag Eng & Contr* 43:287-8 Mr 17 '15

Fire prevention. E. R. Hardy. *Arch & Bldg* 47:28-9 Ja 15

Grouting or cushioning stand pipe bases; abstracts. C. W. Sherman. *Munic J* 89:812 N 25 '15; *Eng & Contr* 44:410-11 N 24 '15

Mercury column alarm for standpipes successfully employed at Ripon, Wis. W. E. Haseltine. *diag Eng & Contr* 43:550-1 Je 23 '15

See also Surge tanks; Water towers

**Standpipes, Concrete**

Concrete standpipes; information concerning more than forty erected in the United States. *Il Munic J* 89:107-10 J1 22 '15

Design, construction and cost of reinforced concrete standpipes. W. G. Kirchoffer. *Il Eng & Contr* 43:331-3 Ap 14 '15

Design, construction and durability of reinforced concrete standpipes. H. B. Andrews and others. *Eng & Contr* 44:47-9 J1 21 '15

Design features and cost of gravity water works at Mellen, Wis. W. G. Kirchoffer. *Il diag Eng & Contr* 44:159-60 S 1 '15

Design of reinforced-concrete standpipes. H. W. Alrich; L. C. Wason. *Il Eng N* 73:949-50 My 13 '15

Discussion of reinforced-concrete standpipes. *Eng N* 73:554-5 Mr 18 '15

History of Attleboro, Mass., standpipe of reinforced concrete. *Il Eng N* 73:816-18 Ap 29 '15

Method of grouting leaky bottom of concrete standpipe, Greenfield, Mass. *Eng & Contr* 44:78 J1 28 '15

Proper design and construction of concrete standpipes. L. J. Mensch. *Eng N* 73:836-7 Ap 29 '15

Serviceableness of reinforced concrete standpipes. *Eng & Contr* 43:330 Ap 14 '15

Watertightness of high concrete standpipes. *Eng N* 73:833-4 Ap 29 '15

See also Water towers, Concrete

**Starch**

Modification of starch by gaseous hydrochloric acid. F. C. Frary and A. C. Dennis. *J Ind & Eng Chem* 7:214-16 Mr 15

Starch-forming enzyme from malt: its action on the hemicelluloses and its commercial application to brewing. C. B. Davis. *Il J Ind & Eng Chem* 7:115-18 F '15

Testing starch. *Textile World* 49:964-5 S '15

**Stars**

Comparison of stellar radiometers and radiometric measurement on 110 stars. W. W. Coblentz. *Il diag U S Bur Stand Bul* 11:613-56 My 27 '15

Evolution of the elements; the evidence of the stars. J. W. N. Sullivan. *Sci Am S* 79:282 My 1 '15

Machine that measures the heat of stars. *Il Sci Am* 113:49 J1 10 '15

Measurement of the distances of the stars. F. W. Dyson. *Sci Am S* 80:162-3, 182 S 11-18 '15

**Starters, Electric. See Electric starters****Starting resistance. See Electric motors—Starting resistance****State aid to commerce. See Great Britain—Board of trade; United States—Federal trade commission****State aid to science. See Science and state****State bridges. See Highway administration****State engineers**

State civil and mechanical engineer and architect. *Eng N* 74:879 Ag 19 '15

**State geologists**

State geological and mining officials. *Eng & Min J* 89:104 Ja 9 '15

**State rights**

Right of the states which is often overlooked; constitutional duty of federal government to protect from harmful regulation of commerce by sister states. A. P. Thom. *Ry Age* 59:48-53 J1 9 '15

See also Water power—United States

**State technical bureaus. See Engineering bureaus****Stationery**

Railway storekeepers' association; committee report. *Ry Age* 58:1044-5 My 21 '15

**Stationery trade**

British India. U S Sp Cons Rep 73:312-17 '15

Paper and stationery trade of the world. G. Dawe. U S Sp Cons Rep 73:1-458 '15

**Stations, Railroad. See Railroads—Stations****Statistics**

Graphs, charts and statistics as aids to administration. E. C. Stothart. *Elec Ry J* 46:665-7 O 2 '15

How to use statistics in management. F. G. Coburn. *Eng M* 49:717-23 Ag '15

Joint committee on standards for graphic presentation; preliminary report. *Am Soc M E J* 37:vii-ix Ag '15; Same. *Am Inst Min E Bul* 106:ix-xii O '15; Same. *J Ind & Eng Chem* 7:394-5 O '15; Same cond. *Eng Rec* 72:633 N 20 '15

Practical applications of the principles of statistics. C. S. Ruffner. *Assn Eng Soc J* 53:264-80 D '14

See also Census; also subdivision Statistics under names of special subjects, e. g. Railroads—Statistics

**Steam**

Diagram for throttling calorimeter. R. S. Bayard. *Power* 42:618 N 2 '15

Heat losses in steam transmission; abstract. W. L. Cathcart. *Am Soc M E J* 37:611 O '15

How to make steam from slag. W. L. Johnson. *diag Iron Tr R* 55:1139-40 D 17 '14

Steam disinfection for sewage on common carriers. *diag Eng Rec* 71:43 Ja 9 '15; Same (Sewage treatment on trains and boats). *Eng M* 48:917-18 Mr '15

Steam versus air for power tools. *Metal Work* 82:796+ D 18 '14

Thermal properties of steam. *J Ind & Eng Chem* 7:74-5 Ja '15

See also Boilers; Condensers (steam); Exhaust steam; Steam engines; Steam flow; Steam heating; Steam pipes; Steam turbines; Steamboats; Superheated steam; Thermodynamics

**Cost**

Cost of steam. C. W. Howard. *Power* 41:273 F 23 '15

Cost of steam. H. L. Strong. *Power* 41:183 Ja 26 '15

Simplified method of determining cost of coal per 1000 lb. of steam; chart. W. H. Schott. *Elec W* 66:764-6 O 2 '15; Same. *Power* 42:456-8 S 28 '15; Same. *Eng & Min J* 100:636-8 O 16 '15

Steam costs in 6800-hp. boiler plant. F. G. Philo. *Power* 41:368-9 Mr 16 '15

**Steam, Exhaust. See Exhaust steam****Steam, Natural**

Using volcanic steam for the production of electrical energy. *Il Sci Am* 112:97-3 Ja 30 '15

**Steam, Superheated. See Superheated steam****Steam accumulators**

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Steam shovel cuts costs of repairing subgrade on paving contract. A. D. Blakeslee. *Eng Rec* 72:289-40 Ag 21 '15

Steam shovel digs 48-inch pipe trench in busy street. F. H. Pond. *Il Eng Rec* 71:693-4 My 29 '15

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Modern practice in heating and ventilation. A. G. King. *Il diags Dom Eng* 68:124-6; 69: 354-5; 70:2-4 Ag 1, D 19 '14, Ja 2 '15

Radiator traps and test data. L. M. Arkley. *diag Heat & Ven* 12:37-9 S '15

Report of tests of radiator steam traps. J. A. Donnelly. *Am Soc Heat & V E* 19:197-201 '15

Return steam trap. *diag Power* 41:193 F 9 '15

Return traps for feeding boilers. K. M. Gilbert. *diags Power* 41:467-8 Ap 6 '15

Scheme for the disposal of high and low pressure steam drips. *Elec W* 66:301 Ag 7 '15

Test of radiator steam traps, engineering department, state of California. H. D. Griffiths. *plan Am Soc Heat & V E* 19:194-6 '15

**Steam turbines**

Calculation of centrifugal stresses in turbine rotors; abstract. W: Kerr. *Am Soc M E J* 37:298-9 My '15

Circulating-oil system of lubrication. *plans Elec W* 65:411 F 13 '15

Comparison costs, steam turbine and Diesel engine, 600 kw. power plant. *Elec W* 66: 807 O 9 '15

Composite-type steam turbine. *diags Power* 41:436-7 Mr 30 '15

Determination of pressure variation in steam turbines and of dimensions of nozzles by means of the JS diagram; abstract. Schmolke. *Am Soc M E J* 37:411-12 JI '15

Difference between reaction and impulse turbines. H. A. Everett. *Int Marine Eng* 20:82-3 F '15

Dimensions, weights and costs of steam turbines. A. A. Potter and S. L. Simmering. *Power* 41:750 Je 1 '15

Effect of vacuum in steam turbines. G. G. Stoney. *Engineer* 118:521-3 N 27 '14; Same cond. *Sci Am S* 79:69 Ja 30 '15; Same cond. *Power* 41:313-16 Mr 2 '15; Discussion. *Engineer* 118:502-3 N 27 '14

Exhaust steam turbine practice. C. A. Tupper. *Il Iron Tr R* 55:1081-5+ D 3 '14

Exhaust steam turbines. *Il Colliery* 35:619-20 Je '15

Five hundred kilowatts from exhaust of hoisting engine. T: Wilson. *Il diags plans Power* 42:143-6 Ag 3 '15

Forty years' advance in steam power units. *Il Power* 41:302-4 Mr 2 '15

Future central station development. J. A. Moyer. *Elec Ry J* 45:987 My 22 '15

Gland packing. *diags Elec W* 65:416 F 13 '15

High steam economy shown by Swedish steam turbine. *Elec W* 66:918-20 O 23 '15

How to select your prime mover. G. Flak. *Iron Tr R* 57:569-72+ S 23 '15

Lining up small turbine sets. J. H. Hurley. *Power* 41:714-15 My 25 '15

Losses in steam turbines. *Elec Ry J* 45:785 Ap 24 '15

Low-pressure turbine at the Carpenter steel mill. *Il plan Power* 42:74-5 JI 20 '15

Low-pressure turbine manifestation. I. L. Benedict. *Power* 41:326-7 Mr 9 '15

Low-pressure turbines in steel mills. F. G. Cutler. *Power* 40:327-8 D 8 '14

Metropolitan needs and sizes of prime movers. *Il Elec W* 66:799-801 O 9 '15

Most economical vacuum for turbines. W. H. Herschel. *Power* 41:744-7 Je 1 '15

Operating experiences with bleeder-type turbines. F. W. Leas. *Power* 42:28-9 JI 6 '15

Abstract and discussion. *Elec R & W Elec'n* 66:1113 Je 12 '15; Excerpt. *Elec W* 65:1622 Je 19 '15

Possible economies from the use of exhaust steam in a water gas plant. S. A. Reinhard and C. A. Schnerr. *Am Gas Light J* 102:226-7 Ap 12 '15

Present status of prime movers. H. G. Stott, R. J. S. Flgett and W. S. Gorsuch. *Am Inst E E Pro* 33:554-62 Je '14; Discussion. 34: 85-102 Ja '15

Relation between steam-turbine rating and water rate. *Elec W* 66:753-4 O 2 '15

Ridgway steam turbine. *Il diags Power* 41:566-8 Ap 27 '15

Rolling mill with steam turbine drive: plant of the Carpenter steel company. *Il plan Iron Age* 94:1221-4 N 26 '14; Same. *Iron Tr R* 55:997-1000 N 26 '14; Same. *Power* 41:455-6 Mr 30 '15; Same cond. *Eng M* 48:591-3 Ja '15

Seventy-fourth street station and its new cross-compound turbines. C. H. Bromley. *Il Power* 41:528-32 Ap 20 '15

Small condensing turbines. W. J. A. London. *Il diags Power* 41:426-31 Mr 30 '15

Specifications for alloys for high-speed superheated steam turbine blading. W. B. Parker. *Il Engineer* 120:441-3 N 5 '15

Standard iron co.'s steam-turbine power plant. O. C. Thomas. *Il Power* 41:49-50 Ja 12 '15

Start a steam turbine slowly. F. W. Wearin. *Power* 42:490 O 5 '15



**Steam turbines—Continued**

- Steam consumption guarantees of small non-condensing turbines. W. J. A. London. *Elec W* 85:1048-9 Ap 24 '15
- Steam turbine blade fastenings. J. A. Capstaff. *Il diag Power* 42:98-103 Jl 20 '15; Abstract. *Int Marine Eng* 20:322 Jl '15
- Steam-turbine diagrams. F. R. Low. *diag Power* 41:596-600 My 4 '15
- Steam-turbine diagrams. P. M. Robinson. *Power* 41:660-1 My 11 '15
- Steam-turbine installation in Mexico. J. Klemm. *diag Power* 41:193-3 F 9 '15; Same. *Eng & Min J* 99:503-4 Ap 3 '15
- Steam turbine mill drive; with discussion. J. D. Berg. *Il diag Eng Soc W Fa* 30:778-803 N '14; Abstract. *Am Soc M E J* 31:236-9 Ap '15
- Steam turbines—their principles and operation. C. H. Bromley. *Il diag Power* 41:626-31 My 11 '15
- Swiss turbo-generator sets. *Il diag Engineer* 119:179-82 E 19 '15
- Things of interest in recent turbine design. *Power* 40:910-12 D 29 '14
- Turbine examination questions. W. Leonard. *Power* 42:593-4 O 26 '15
- Turbines vs. engines in units of small capacities. J. S. Barstow. *Am Soc M E J* 37:511-15 S '15; Same. *Sci Am S* 80:366-8 D 4 '15; Same cond. *Power* 42:278-80 Ag 24 '15; Excerpts. *Eng & Min J* 100:392-3 S 4 '15
- Turbo-blower governing devices; abstract. A. Stodola. *diag Am Soc M E J* 37:181-3 Mr '15
- Turbo-blowers for blast-furnace blowing. R. H. Rice. *Il diag Am Inst Min E Bul* 89:721-43 My '14; Discussion. 100:791-809 Ap '15
- Turbo-generator sets with impulse turbines. *Il Elec W* 65:951 Ap 10 '15
- 1250 kw mixed pressure turbo-generator; abstract. F. Schulte. *Am Soc M E J* 37:651-2 N '15
- Two-stage condenser. P. A. Bancel. *diag Power* 42:402-7 S 21 '15; Excerpts. *Elec W* 66:1148-9 N 20 '15
- Wait turbo-generator on elevator load in the Lumber exchange building, Chicago. *Il diag Power* 42:717-20 N 23 '15

**Foundations**

- Structural steel supports for large steam turbines. *diag plan Eng N* 73:66-9 Ja 14 '15
- Steam turbines, Marine
- Geared marine steam turbines. *Engineer* 119:437-8 Ap 30 '15
- Geared turbine Atlantic liner, Transylvania. *plan (p. 435) Engineer* 118:433 N 6 '14; Same cond. *Eng M* 48:605-6 Ja '15
- Geared turbines for ship propulsion; abstract. W. D. McLaren and G. M. Welsh. *Int Marine Eng* 20:89 F '15
- Governing of marine steam turbines. *diag Engineer* 119:235 Mr 5 '15
- Turbine installation on torpedo boats of the new Spanish navy. *Int Marine Eng* 20:516 N '15

**Steam valves. See Valves****Steamboat lines**

- Commission on relations between railways and waterways. *Ry Age* 58:1037-8 My 21 '15
- Railroads lose lake lines. *Iron Age* 95:1146 My 20 '15
- Railroads must divorce lake steamship lines. *map Ry R* 56:582-5 My 22 '15
- Railways must abandon control of boat lines on the Great Lakes; abstract of the Interstate commerce commission's decision. *Ry Age* 58:1046-7 My 21 '15
- Southern Pacific can continue boats on Sacramento river. *Ry R* 56:856 Ja 19 '15
- Southern Pacific may operate steamship lines to Balboa. *Ry R* 56:254-5 F 20 '15
- Southern Pacific's ownership of the schooner Pasadena. *Ry R* 56:565-6 Ap 24 '15

**Steamboats**

- Cable-repairing steamer "Transmitter." F. C. Coleman. *Il plan Int Marine Eng* 20:382-6 S '15
- Development of the Transatlantic steamship. *Il Sci Am* 112:523-5 Je 5 '15
- Economy. F. H. Sadler. *diag Int Marine Eng* 20:459-63 O '15

French-built cable ship Edouard Jéramec. F. C. Coleman. *Il diag Int Marine Eng* 20:146-50 Ap '15

Fruit carrying steamer van Hogendorp. F. C. Coleman. *Il diag plans Int Marine Eng* 20:67-71 F '15

Interesting change in twin screw steamer. D. Sawyer. *Int Marine Eng* 20:176-8 Ap '15

Interesting vessels of fifty years ago: the Stevens Battery and the Monitor. W. D. Forbes. *diag Int Marine Eng* 20:227-8 My '15

Interior views of the Great Northern. *Il Int Marine Eng* 20:384-8 S '15

Japanese liner Fushimi Maru. *Il plan Int Marine Eng* 20:311-12 Jl '15

Lake passenger steamer Noronic. *diag Int Marine Eng* 20:421-5 O '15

New P. & O. boat: the Khiva. *Int Marine Eng* 20:59 F '15

Red Star liner Belgenland. *Il Int Marine Eng* 20:341-7 Ag '15

Shallow draft boat for the Yangtze Kiang. *plans Int Marine Eng* 20:490-2 N '15

Southern Pacific ferry steamer Alameda. E. W. Olin. *Il plans Int Marine Eng* 20:194-8 My '15

Steamer Emblane. *Il plans Int Marine Eng* 20:297-8 Jl '15

Steamer Francis Hanify. *Il diag plans Int Marine Eng* 20:30-2 Ja '15

Steamship design; a method of determining the principal dimensions. H. A. Everett. *Int Marine Eng* 20:436-40 O '15

S. S. Great Northern and Northern Pacific for the Spokane, Portland & Seattle railway company. *Il diag plans Int Marine Eng* 19:535-45 D '14

Turbine passenger steamships Great Northern and Northern Pacific. *Il plan (supp) Engineer* 120:129-31 Ag 6 '15

Twin screw passenger and cargo steamers Missanable and Metagama; abstract. *Int Marine Eng* 20:90 F '15

Western river steamers and barges. E. A. Burnside. *Il plan Int Marine Eng* 20:478-87 N '15

White Star liner Britannic. *Il Int Marine Eng* 19:558-9 D '14

*See also* Boilers, Marine; Car ferries; Freight ships; Marine engines; Propellers; Ship propulsion; Shipbuilding; Shipping; Steamboat lines; Tank ships; Tenders, Naval; Towboats; Warships; Yachts

**Steamers. See Steamboats****Steamships. See Steamboats****Steel**

- American society for testing materials 18th annual meeting. *Ry Age* 59:61-6 Jl 9 '15
- Brittleness in steel; abstract. V. Bernard and A. Portevin. *Il Iron Age* 96:1056 N 4 '15
- Can the dissociation theory be applied to solid solutions in steels? E. D. Campbell. *Am Chem Soc J* 37:2039-46 S '15
- Chemical and mechanical relations of iron, cobalt and carbon. J. O. Arnold and A. A. Read. *Iron Age* 95:953 Ap 29 '15
- Constitution of the iron-carbon alloys: a chemical theory to explain the different properties by the existence of ferrated carbides. G. Auchy. *Iron Age* 95:50-1 Ja 7 '15
- Copper steel for resisting corrosion. D. M. Buck. *Eng M* 40:762-3 Ag '15
- Corrodibility of cast iron and steel. J. N. Friend and C. W. Marshall. *Iron Age* 95:1114-15 My 20 '15
- Corrosion of steel and cast iron compared. R. C. McWane and H. Y. Carson. *Il Foundry* 43:467-9 N '15
- Effect of chemical composition upon the magnetic properties of steels. W. B. Ruder. *Gen Elec R* 18:197-203 Mr '15
- Effect of displaced magnetic pulsations on the hysteresis loss of sheet steel. L. W. Chubb and T. Spooner. *Il diag Am Inst M E Pro* 34:2321-42 O '15
- Effect of finishing temperatures of rails on their physical properties and microstructure. W. R. Shimer. *Il Am Inst Min E Bul* 99:557-85 Mr '15; Same. *Iron Age* 95:394-7 F 18 '15; Same. *Iron Tr R* 56:379-82 F 18 '15; Discussion. *Am Inst Min E Bul* 101:1107-11 My '15

**Steel—Continued**

- Elastic properties of steel at moderately high temperatures; abstract. F. R. Rowett. *Am Soc M E J* 37:419 J1 '15
- Has titanium any influence on the properties of steel? F. A. J. FitzGerald. *diags Met & Chem Eng* 13:28-9 Ja '15; Same cond. *Iron Age* 95:309 F 4 '15; Summary. *Elec Ry J* 45: 98 Ja 9 '15
- Machine steel for small tools. O. D. Kinsey. *II diags Ry Age (Mech ed)* 39:189-90 Ap '15
- Modern steels and their heat treatment. R. R. Abbott. *II J Fr Inst* 179:415-38 Ap '15; Same. *Iron Tr R* 57:981-6 N 18 '15; Same abr. *Iron Age* 95:790-2 Ap 8 '15; Abstract, with discussion. *Am Soc M E J* 37:267-71 My '15
- Oxy-acetylene welding process. S. W. Miller. *II Mach* 22:216-18 N '15
- Phosphorus in iron and steel; abstracts. W. H. Hatfield. *II Engineer* 120:335-6 O 8 '15; *Iron Age* 95:1234 N 25 '15
- Protective coatings for iron and steel. E. P. Later. *Foundry* 42:497-8; 43:35+ D '14-Ja '15
- Steel and civilization. J. O. Arnold. *Sci Am S* 80:227 O 9 '15
- Steel—its pathology. J. E. Schipper. *II diags Automobile* 32:611-15, 660-3+, 705-8+, 796-800 Ap 8-22, My 6 '15
- Steel over 2000 years old. R. A. Hadfield. *Iron Age* 95:464 Ag 26 '15
- Structure of carbon tool steel. J. V. Emmons. *II Iron Age* 95:842-3 Ap 15 '15
- Surface decarbonization of tool steel. J. V. Emmons. *II Am Inst Min E Bul* 13:2233-48 S '14; Same cond. *Iron Tr R* 55:737+ O 15 '14; Same cond. *Iron Age* 94:1288-90 D 3 '14; Abstract. *Am Soc M E J* 36:0198-9 O '14; Abstract. *Ind Eng* 15:27-8 Ja '15; Discussion. *Am Inst Min E Bul* 100:790-4 Ap '15
- Symposium on iron and steel. *Met & Chem Eng* 13:655-7 O 1 '15
- Titanium and its effects on steel. G. F. Comstock. *II J Ind & Eng Chem* 7:87-94 F '15; Same cond. *Sci Am S* 80:327 N 20 '15
- Unsymmetrical hysteresis loop. J. D. Ball. *Am Inst E E Pro* 34:2275-97 O '15
- See also* Annealing; Armor plate; Bessemer process; Case hardening; Cobalt steel; Concrete, Reinforced; Corrosion and anti-corrosives; Damascus steel; Electrolytic corrosion; Foundry practice; Iron; Manganese steel; Metallography; Metals; Nickel steel; Railroad ties, Steel; Rails; Silicon steel; Steel, Structural; Steel castings and other headings beginning Steel; Tool steel; Vanadium steel
- Analyses**
- Alumina in steel. G. F. Comstock. *II Met & Chem Eng* 13:841-5 D 1 '15
- Analoid method for the determination of manganese in steel, iron ore and slag. *Met & Chem Eng* 12:793-4 D '14
- Analoid method for the determination of phosphorus in steel, iron and slag. *Met & Chem Eng* 13:191-2 Mr '15
- Determination of aluminum oxide and total aluminum in steel. F. O. Kichline. *J Ind & Eng Chem* 7:806-7 S '15
- Determination of chromium and vanadium in steel. C. H. Rich and G. C. Whitam. *Met & Chem Eng* 13:238-9 Ap '15
- Determination of copper in steel. W. D. Brown. *J Ind & Eng Chem* 7:213 Mr '15
- Determining carbon in cast steel rapidly. W. L. Morrison. *II Foundry* 43:151-2 Ap '15
- Effect of oxygen on steel quality. J. A. Pickard and F. M. Potter. *Iron Tr R* 57:136-7+ J1 15 '15
- Electric muffle furnace for the determination of carbon and oxygen in steel and tungsten powder. C. M. Johnson. *II Met & Chem Eng* 13:17 Ja '15
- How to detect phosphorus in steel. W. T. Stead. *II Iron Tr R* 57:989-90 N 18 '15
- Improved method for the determination of nitrogen in steel. L. E. Barton. *J Ind & Eng Chem* 6:1012-13 D '14
- Method for determining gases in steel. P. Goerens and J. Paquet. *diag Iron Age* 95: 1060-1 My 13 '15
- New specifications for rails; Pennsylvania R. R. system. *Eng N* 74:397 Ag 26 '15

Platinum boats for carbon determination by the direct combustion method. H. F. Siever. *Met & Chem Eng* 13:525 S 1 '15

Shells from European battlefields. *II Iron Age* 95:186-7 J1 22 '15

Simplified ferrous sulfate method for the determination of vanadium in steel. G. T. Dougherty. *J Ind & Eng Chem* 7:419-20 My '15

**Failures**

- Failure and heat treatment of drill steel. S. V. Bergh. *II diags Eng & Min J* 99:612-14 Ap 3 '15
- Failure of hollow drill-steel. T. E. Sturtevant. *Eng & Min J* 99:579 Mr 27 '15
- Progressive fractures from alternate bending. J. Younger. *Eng N* 73:1237 Je 24 '15
- Surprising failure of steel ship plates. *Int Marine Eng* 20:50-1 F '15

**Nomenclature**

- Modified iron-carbon diagram. E. A. Sperry. *Met & Chem Eng* 13:469-71 Ag '15

**Specifications**

- Proposed standard specifications for quenched high-carbon steel splice bars. *Ry Age* 55:61-2 J1 9 '15
- Specifications for cold drawn steel. *Iron Tr R* 57:47 J1 1 '15
- Specifications for springs, alloy steel forgings and axles. *Ry Age* 59:53-4 J1 9 '15

**Testing**

- Behavior of iron and steel under compression in tests; abstract. H. Monden. *Am Soc M E J* 37:721 D '15
- Brinell hardness and tenacity factors of a series of heat-treated special steels; discussion. A. McWilliam and E. J. Barnes. *Met & Chem Eng* 13:502-3 Ag '15
- Cause of brittleness in soft steel: German tests on a Krupp shock-testing machine. *diags Iron Age* 94:1222-3 D 8 '14
- Change in volume and shape by hardening. *Iron Age* 95:1299-1402 Je 24 '15
- Charpy impact test on treated steels. J. J. Thomas. *II Iron Age* 95:138-40 J1 15 '15
- Comparison of the properties of a nickel, carbon and manganese steel before and after heat treatment. R. A. Abbott. *Am Soc M E J* 37:440-2 Ag '15; Same. *Iron Tr R* 57:22-3 J1 1 '15; Discussion. *Am Soc M E J* 37:442-3 Ag '15
- Data on nickel steels. G. W. Armstrong. *Eng & Contr* 44:53-4 J1 21 '15
- Detection of burning in steel. J. E. Stead. *II Iron Tr R* 57:843-4 O 28 '15; Abstract. *Iron Age* 95:233 J1 23 '15
- Dynamic properties of steel castings. J. L. Thler. *II diag Iron Age* 95:764-6 S 30 '15; Same. *Iron Tr R* 57:680-2 S 30 '15; Same. *Foundry* 43:417-19 O '15
- Effect of carbon on the physical properties of heat-treated carbon steel. J. H. Nead. *II Am Inst Min E Bul* 108:2341-57 D '15
- Effect of titanium alloys on steel. G. F. Comstock. *II Iron Tr R* 57:391-5+ Ag 16 '15
- Effect of various elements in steel on its resistance to corrosion. A. S. Cushman. *Eng & Contr* 44:64-5 J1 28 '15
- Finishing temperatures of rails; American society for testing materials committee report. *Iron Tr R* 55:1207-9 Je 24 '15; Same. *Ry R* 57:201-3 Ag 14 '15; Same cond. *Iron Age* 95: 19-21 J1 1 '15; Excerpts. *Ry Age* 59:64-5 J1 9 '15
- Fixing the elastic limit standard. T. D. Lynch. *II Iron Tr R* 57:79-81+ J1 8 '15
- Heat-treatment and testing of shrapnel shells. J. M. Wilson. *diags Mach* 22:28-31 S '15
- Importance of annealing steel castings. *Iron Age* 95:128-30 J1 15 '15
- Locating the critical range with the Brinell ball tester. J. G. Ayers, jr. *Mach* 21:283 D '14
- Measuring the twisting strength of steel. R. H. Moulton. *II Sci Am* 112:497 My 29 '15
- Micrographic inspection of steel: what the United States navy has done in fixing causes of failures. *II Iron Age* 95:292-3 F 4 '15
- Microscopic tests of steel; German investigations at Krupps. B. Strauss. *Iron Age* 95: 703-4 Ap 8 '15
- New test methods demanded. *Iron Tr R* 56: 571-2 Mr 18 '15

**Steel—Testing—Continued**

- Novel tests for rail steel. Elec Ry J 46:454 S 11 '15
- Reagent for macroscopic etching. J. L. Jones. II Iron Tr R 56:1303-4 Je 24 '15; Abstract. Eng M 49:919 S '15
- Recent progress in corrosion resistance. D. M. Buck. II Iron Age 95:1231-4 Je 3 '15; Same. Eng & Contr 43:574-6 Je 30 '15; Same. Iron Tr R 56:1155-3 Je 10 '15; Same. Metal Work 83:879-82 Je 13 '15; Excerpt (Copper steel for resisting corrosion) Eng M 49:762-3 Ag '15; Discussion. A. S. Cushman and others. Iron Age 95:1234-9 Je '15; Same. Iron Tr R 56:1159-63-1 Je 10 '15; Same abr. Metal Work 83:882-3 Je 18 '15
- Standardization of scleroscope observations. J. J. Ralph. diags Mach 22:52-3 S '15
- Stress distributions in engineering materials; report to the British association. Engineer 120:354-5 O 8 '15
- Structure and hysteresis loss in medium-carbon steel. F. C. Langenberg and R. G. Webber. II Am Inst Min E Bul 98:291-300 F '15; Same. Iron Age 95:506-8 Mr 4 '15; Same cond. Iron Tr R 57:576-7 S 23 '15
- Suggestions regarding the determination of the properties of steel. A. N. Mitinsky. Am Inst. Min E Bul 104:1697-1705 Ag '15; Abstract. Iron Age 96:452-3 Ag 26 '15; Same cond. (Proportional limit is prime factor) Iron Tr R 57:1184-6 D 16 '15; Discussion. Am Inst Min E Bul 108:2481-95 D '15
- Unsoundness in ladle test ingots. R. W. Hunt. II Iron Tr R 57:1087-9 N 25 '15; Same. Iron Age 96:1303-5 D 3 '15
- Steel, Coloring of**  
Carbonia finish. II Am Gas Light J 103:81 Ag 9 '15
- Steel, Hardening of**  
Change in volume and shape by hardening. Iron Age 95:1399-1402 Je 24 '15
- Effect of chromium and tungsten upon the hardening and tempering of high-speed tool steel; abstracts, with discussion. C. A. Edwards and H. Kikkawa. Engineer 120:313-14 O 1 '15; Iron Age 96:1126-7 N 11 '15
- Effects of quenching mediums. H. V. Wille. II Iron Tr R 57:82-4 JI 8 '15; Same cond. Iron Age 96:190-1 JI 22 '15
- Factors in hardening tool steel: abstracts. J. A. Mathews and H. J. Stagg. Elec Ry J 44:1249-50 D 5 '14; Iron Age 94:1340-4 D 10 '14; Mach 21:396-8 Ja '15; Ind Eng 15:58-9 F '15; Ry Age (Mech ed) 89:243-7 My '15; Iron Tr R 57:184-7-4 JI 23 '15; Abstract, with discussion. Am Soc M E J 37:141-7 Mr '15
- Hardening bevel wheels by special machine. II diag Automobile 32:461 Mr 11 '15
- Hardening high speed screw machine tools. R. A. Millholland. Iron Age 96:745 S 30 '15
- Hardening of metals. Am Soc M E J 37:489-90 Ag '15
- Hardening of steel. J. O. Arnold. Engineer 118:877 D 18 '14
- Recent progress with alloys—theory explaining self-hardening metals including the special steels. L. Guillet. Automobile 31:1118-20 D 17 '14
- Salt baths for steel hardening; carbonizing and decarbonizing effects of molten salts. E. F. Lake. Mach 21:657-9 Ap '15
- Spring forming and hardening machine. II Iron Age 95:1164-5 My 27 '15
- See also Case hardening; Steel, Heat treatment of
- Steel, Heat treatment of**  
Automatic heat control. E. P. Reichhelm. II Mach 21:304 D '14
- Carbon and high-speed steel. H. W. Loughridge. Ry Age (Mech ed) 89:472 S '15
- Carburization and heat-treatment. J. G. Ayers, jr. II Mach 22:17-23 S '15
- Charpy impact test on treated steels. J. J. Thomas. II Iron Age 96:138-40 JI 15 '15
- Comparison of the properties of a nickel, carbon and manganese steel before and after heat treatment. R. R. Abbott. Am Soc M E J 37:440-2 Ag '15; Same. Iron Tr R 57:22-3 JI 1 '15; Discussion. Am Soc M E J 37:442-3 Ag '15
- Continuous rotary heat-treating furnace. F. M. Paul. II Iron Age 96:569 S 9 '15; Same. Horseless Age 36:234 S 1 '15; Same. Sci Am 113:383 O 23 '15
- Decarbonization of steel in salt baths when heating for hardening. Mach 21:344 D '14
- Development of heat treatment. R. R. Abbott. II Sibley J 29:150-6 F '15; Abstract. Met & Chem Eng 13:390-1 Je '15
- Developments in the heat treatment of railway gearing; with discussion. W. H. Phillips. II Eng Soc W Pa. 30:737-77 N '14; Abstracts. Iron Tr R 56:1134 D 17 '14; Am Soc M E J 37:237-8 Ap '15
- Discussion of heat treatment results. H. V. Wille. Iron Tr R 57:986-7 N 18 '15
- Effect of carbon on the physical properties of heat-treated carbon steel. J. H. Nead. II Am Inst Min E Bul 103:2341-57 D '15
- Electric furnace for reheating, heat treating and annealing. T. F. Baily. Eng Soc W Pa. 31:255-72 Ap '15; Same. Met & Chem Eng 13:558-64 S 1 '15; Same cond. Ry Age (Mech ed) 89:481-2 S '15; Discussion. Eng Soc W Pa. 31:272-83 Ap '15
- Finding the transformation points in steel. E. F. Lake. II Mach 21:711-14 My '15
- Flexible heat-treating installation. II diag Iron Age 95:607-10 S 2 '15
- Heat-treating plant for forge shop work. II Iron Age 94:1284-6 D 3 '14
- Heat-treatment and testing of shrapnel shells. J. M. Wilson. diags Mach 22:28-31 S '15
- Heat treatment in automatic electric furnaces; with discussion. T. F. Baily. Iron Age 96:898-5 O 28 '15; Same cond. Iron Tr R 57:833, 856 O 28 '15
- Heat treatment of gears. Iron Age 96:629 S 16 '15
- Heat treatment of iron and steel in a neutral atmosphere. A. H. White and E. T. Hood. diag Am Gas Light J 103:310-11, 314-15 N 15 '15
- Heat treatment of steel; discussion of papers at meeting of American society for testing materials. Iron Age 96:21-2 JI 1 '15
- High speed tool steels. F. C. A. H. Lantsberry. II Iron Age 96:238-41 JI 29 '15
- Modern steels and their heat treatment. R. R. Abbott. II J Fr Inst 179:415-38 Ap '15; Same. Iron Tr R 57:981-6 N 18 '15; Same abr. Iron Age 95:790-2 Ap 8 '15; Abstract, with discussion. Am Soc M E J 37:267-71 My '15
- Neglected phenomena in steel treatment. M. El Leeds. diags Iron Age 96:80-2 JI 8 '15
- Pointers on heat treatment of steel. J. H. Parker. diags Iron Tr R 56:771-4 Ap 15 '15
- Practical facts in heat treating steel. R. A. Millholland. Iron Age 96:835-7, 888-9 Ap 15-22 '15
- Producer gas for heat treating. II diags Iron Tr R 57:521-3 S 16 '15
- Recommended practice for heat-treating case-hardened carbon-steel objects. Foundry 43:102a Mr '15
- Recording instruments for heat-treating. II Automobile 32:460-1 Mr 11 '15
- Scientific manufacture of automobile springs. E. C. Arndts. II Horseless Age 34:921-3 D 23 '14
- Steel—its pathology.** J. E. Schipper. II Automobile 32:706-8-4 Ap 22 '15
- Study of an axle shaft for a motor truck. J. Younger. II diags Am Soc M E J 37:435-9 Ag '15; Same. Iron Tr R 56:1311-14 Je 24 '15; Same cond. Horseless Age 36:142-4 Ag 1 '15; Abstract. Iron Age 96:27 JI 1 '15; Discussion. Am Soc M E J 37:439-40 Ag '15
- Surface decarburization of steel. J. G. Ayers, jr. II Iron Tr R 56:1305-6-4 Je 24 '15; Same. Iron Age 96:5-7 JI 1 '15
- Tempering tools with the electric furnace. Ry Age (Mech ed) 89:590 N '15
- Tool steel heating forge. II Iron Tr R 56:679 Ap 1 '15
- See also Case hardening
- Steel, Structural**  
Comparison of carbon steel and high-alloy steels for bridges. J. A. L. Waddell. Eng & Contr 41:685-88; Discussion. 41:688-90; 42:243-4; 43:5-6 Je 17, S 9, N 25 '14
- Heat treated and alloy steels. C. D. Young. Ry Age (Mech ed) 89:13-14 Ja '15
- Heat treated and alloy steels for locomotive parts. Ry Age 57:1129-30 D 18 '14

**Steel, Structural—Continued**

How an axle failed in service. *Il* Iron Tr R 56:607-10+ Mr 25 '15  
 New test methods demanded. Iron Tr R 56: 571-3 Mr 18 '15  
 Old steel of razed building examined for rust. *Eng Rec* 72:223-4 Ag 21 '15  
 Preventing corrosion of steel substructure of the Corlandt street ferry terminal of the Pennsylvania in New York city with gunite. *Il* Ry Age 58:852 Ap 16 '15  
 Proper painting for steel work. Iron Tr R 55: 1036-7 D 3 '14; Same cond. *Eng M* 48:758-60 F '15  
 Reciprocating and revolving parts; alloy and heat-treated carbon steel. H. A. F. Campbell. *Ry Age* (Mech ed) 89:215-16 My '15  
 Steel for modern motor cars. *Il* Iron Tr R 56: 263-7 F 4 '15; Abstract. *Ind Eng* 15:57 F '15  
 Steel for steering knuckles. E. F. Lake. *Il* Iron Tr R 56:811-12+ Mr 25 '15  
 Steel—its pathology. J. E. Schipper. *Il* *diags Automobile* 32:796-800 N 6 '15  
 Surprising failure of steel ship plates. *Int Marine Eng* 20:50-1 F '15  
 Use of high-grade alloy steels to reduce weight of locomotives. H. V. Wille. *Am Soc M E* J 27:81-2 Ja '15

*See also* Bridges, Iron and steel; Cars, Steel; Silicon steel; Steel castings; Steel construction; Steel reinforcing bars

**Painting**

*See* Painting, Structural

**Steel, Tool.** *See* Tool steel

**Steel alloys**

Alloy-steel rails. *Eng N* 72:1111-12 D 3 '14  
 Alloy steels. G. L. Norris. *Met & Chem Eng* 13:739-42 O 15 '15  
 Alloy steels economical for long-span bridges. J. A. L. Waddell. *Eng Rec* 72:386-7 S 25 '15  
 Development of commercial alloy steels. E. D. Rogers. *Iron Age* 96:990-3 O 28 '15; Same cond. *Iron Tr R* 57:839-40+ O 28 '15  
 Recent progress in corrosion resistance. D. M. Buck. *Il* *Iron Age* 95:1231-4 Je 3 '15; Same. *Eng & Contr* 43:574-6 Je 30 '15; Same. *Iron Tr R* 56:1155-8 Je 10 '15; Same. *Metal Work* 83:879-82 Je 18 '15; Excerpt (Copper steel for resisting corrosion) *Eng M* 49:763-3 Ag '15; Discussion. A. S. Cushman and others. *Iron Age* 95:1234-9 Je 3 '15; Same. *Iron Tr R* 56:1159-63+ Je 10 '15; Same abr. *Metal Work* 83:882-3 Je 18 '15  
 Special steels for track work. W. C. Cushing. *Ry Age* 59:747-51 O 22 '15; Abstracts. *Eng Rec* 72:317 S 11 '15; *Iron Age* 96:692 S 23 '15; *Elec Ry J* 46:878-9 O 23 '15  
 Steel—its pathology. J. E. Schipper. *Il* *Automobile* 32:660-3+ Ap 15 '15

*See also* Cobalt steel; Manganese steel; Nickel steel; Vanadium steel

**Steel balls.** *See* Balls, Steel

**Steel belting.** *See* Belting, Steel

**Steel bins.** *See* Bins, Steel

**Steel bridges.** *See* Bridges, Iron and steel

**Steel cars.** *See* Cars, Steel

**Steel castings**

Acid open-hearth steel for castings. E. F. Cone. *Il* *Iron Age* 95:561-3 Mr 11 '15  
 Castings as electrical apparatus parts. A. B. Reynders. *Iron Age* 94:1496-7 D 31 '14; Abstract (Holding an electrical manufacturer's business). *Foundry* 43:98-7 Mr '15  
 Common sense-steel foundryman's great asset. S. Muntz and S. Roubieu. *Il* *Foundry* 43: 175-8 My '15; Same. *Iron Tr R* 57:949-52 N 11 '15  
 Converter foundry of large capacity. E. F. Cone. *Il* *plan* *Iron Age* 96:669-74 S 23 '15  
 Detroit steel castings company's plant. *Il* *plan* *Iron Age* 96:701-8 S 23 '15  
 Dynamic properties of steel castings. J. L. Uhler. *Il* *diag* *Iron Age* 96:754-6 S 30 '15; Same. *Iron Tr R* 57:830-2 S 30 '15; Same. *Foundry* 43:417-19 O 15 '15  
 Electric furnace in the foundry. W. G. Kranz. *Am Inst Min E* Bul 101:927-30 My '15; Same. *Foundry* 43:164-5 Ap '15; Same. *Iron Age* 95:

780-1 Ap 8 '15; Same. *Met & Chem Eng* 13: 565-6 S 1 '15; Discussion. N. Petinot. *Am Inst Min E* Bul 108:2507-11 D '15; Same. *Met & Chem Eng* 13:650 O 1 '15  
 Electric furnace in the foundry. W. L. Morrison. *Iron Tr R* 57:177-9 J 22 '15  
 Finding costs in the steel foundry. G. Muntz. *Iron Tr R* 57:482-4 S 9 '15  
 Heroult furnaces for foundry use. *Il* *diags* *Iron Tr R* 56:976-8 My 13 '15; Same. *Foundry* 43: 235-7 Je '15  
 How to eliminate defects in steel castings. J. H. Hall. *Foundry* 43:146-51 Ap '15; Same. *Iron Tr R* 57:225-9+ J 1 29 '15  
 Importance of annealing steel castings. *Iron Age* 95:128-30 J 15 '15  
 Iron and steel castings. J. H. Hall. *Met & Chem Eng* 13:655 O 1 '15  
 Limitations of the electric furnace in the manufacture of steel castings. E. F. Lake. *Met & Chem Eng* 13:137-8 Mr '15  
 Limitations of the electric furnace in the manufacture of steel castings. G. Muntz. *Met & Chem Eng* 13:108-10 F '15  
 Manganese-steel castings in the mining industry. W. S. McKee. *Il* *diag* *Am Inst Min E* Bul 108:2309-411 D '15; Same. *Iron Tr R* 57:1077-81 D 2 '15  
 Production of large steel castings by the baby Bessemer. *Iron Age* 95:623 Mr 18 '15  
 Radiography of metals. W. P. Davey. *Il* *Am Inst Min E* Bul 104:1515-25 Ag '15; Same. *Gen Elec R* 18:795-800 Ag '15; Same cond. *Iron Age* 95:522-4 S 2 '15; Abstract. *J Fr Inst* 180:489-90 O '15  
 Shrinkage cracks in steel castings. W. R. Bos-singer. *Iron Tr R* 57:633 S 30 '15; Same. *Foundry* 43:411-12 O 15 '15  
 Steel casting plant at Oakland, Cal. *Il* *Iron Age* 95:1387-8 Je 24 '15  
 Steel foundry sessions of the American foundrymen's association. *Iron Age* 96:816-18 O 7 '15  
 Steel mill castings: use of manganese steel in heavy rolling mill equipment. G. Tripp. *Il* *Iron Tr R* 56:49-55 Ja 7 '15  
 Study in steel castings. J. H. Whitely. *Iron Age* 95:541-2 Mr 4 '15  
 X-ray inspection of a steel casting. W. P. Davey. *Il* *Gen Elec R* 18:25-7 Ja 15 '15; Same. *Iron Age* 95:126-7 Ja 21 '15; Same. *Sci Am S* 79:84 F 6 '15; Same. *Eng M* 49:100-7 Ap '15; Same. *Ry Age* (Mech ed) 89:170 Ap '15; Same. *Engineer* 119:350 Ap 9 '15  
*See also* Steel ingots; Steel metallurgy

**Steel columns.** *See* Columns, Steel

**Steel construction**

Aeroscope, a novel feature of Panama-Pacific exposition. *Il* *Eng Rec* 71:423 Ap 3 '15  
 Anchored airship: structural amusement device for Panama-Pacific fair weighing 620 tons. *Il* *Iron Age* 95:184 Ja 31 '15  
 Chicago municipal pier. *Il* *diags* *Eng N* 74:193-7 J 1 29 '15  
 Covered slip and pier with gantry cranes for handling lumber. *diags* *Eng N* 74:494-5 S 9 '15  
 Derrick mounted on travelling cranes for mill erection at Thane, Alaska. *Il* *Eng N* 73:127 Ja 21 '15  
 Design and construction of the 435-ft. steel framed tower of jewels at the Panama-Pacific international exposition. F. S. M. Harris. *Il* *diags* *Eng & Contr* 43:47-54 Ja 20 '15; Same cond. *Eng N* 73:866-73 My 6 '15; Same cond. *Eng Rec* 71:112-16 Ja 23 '15  
 Design of 152-foot steel-framed dome. A. W. Earl and T. F. Chace. *Il* *diags* *Eng Rec* 70: 451-4, 482-4 O 24-31 '14; Same. *Eng & Contr* 42:314-20 S 30 '14  
 Design of steel elevated railways, N. Y. rapid transit system. M. E. Grist. *Il* *diags* *Eng N* 73:971-7 My 20 '15  
 Designing a steel dome for the horticultural palace at the Panama-Pacific international exposition. A. W. Earl and T. F. Chace. *diags* *Eng N* 74:208-12 J 1 29 '15  
 Detail and fabrication of Harlem river tubes. T. Duckworth. *Il* *diags* *Eng Soc W Pa* 81: 538-60; Discussion. 81:560-88 O '15  
 Economy in cost and erection of steel building results from cantilever beam design. *diags* *Eng Rec* 72:392-3 S 25 '15

**Steel construction—Continued**

- Erecting 40-ton girders at a height of 250 feet above the street. *Il diags* Eng Rec 70: 699-702 D 26 '14
- Fireproof ice-house at Lake Hopatcong. *diags* Eng Rec 71:50-1 Ja 9 '15
- Framing of the dome of the palace of horticulture, Panama-Pacific international exposition. A. W. Earl and T. F. Chace. *Il diags* Eng N 74:112-15 J1 15 '15
- Full-load secondary stresses in elevated-railway bents. L. R. Manville. Eng N 74:949-51 N 11 '15
- Heavy trusses and foundation girders used in steel bank building. *diags* Eng Rec 71: 713-14 Je 5 '15
- High stresses carried by heavy riveted truss. *Il diags* Eng Rec 72:159 Ag 7 '15
- How some problems in the New York elevated improvement work were solved. *Il diags* Eng Rec 71:781-3 Je 19 '15
- Interlocking steel construction. *Il Sci Am* 113: 77 J1 24 '15
- Large steel grandstand for automobile race-track, Sheephead Bay, N. Y. *Il Eng N* 74: 655 S 30 '15
- Octagonal framed dome, San Francisco auditorium. *Il diags* Eng N 73:773-5 Ap 22 '15
- Pressed-steel building construction. *Il Eng N* 73:1098 Je 3 '15
- Rapid construction of additions to steel building; National cloak & suit company. H. E. Midler. *Il diags* Eng Rec 71:404-5 Mr 27 '15
- Rapid erection of steel coal breaker. C. S. Phillips. *Il Eng N* 74:1-2 J1 1 '15
- Rapid steel erection on third track work, Second avenue elevated, New York. *Il diags* Eng Rec 71:86-7 Ja 18 '15
- Results of recent tests of steel columns presented and discussed. Eng Rec 71:649-50 My 1 '15
- Section of New York elevated rebuilt under heavy traffic without an accident. *Il map* Eng Rec 72:470-2 O 16 '15
- Special details in reinforced concrete and steel building construction. L. W. Bruck. Eng & Contr 44:143-4 Ag 25 '15
- Stations for third track, New York elevated, placed above existing platforms. *Il diags* Eng Rec 72:138-9 J1 31 '15
- Steel column tests. Eng Rec 71:574 My 8 '15
- Steel construction for the Schenley theater, Pittsburgh. C. N. Haggart. *diags* Eng N 73: 658-9 Ap 8 '15
- Steel frame for a large electric sign. *diags* Eng N 73:1071 Je 3 '15
- Steel headframe at no. 9 shaft, Republic mine, Vulcan, Mich. F. L. Burr. *Il diags* Eng & Min J 100:379-82, 480-5 S 4-11 '15
- Stresses in a rigid frame of two columns and a truss; with table. F. Freyhold. Eng N 73: 1081-3 My 27 '15
- Structural features of Northwestern-mutual life insurance building, Milwaukee. *diags* Eng Rec 71:205-7 F 13 '15
- Structural steel supports for large steam turbines. *diags* plan Eng N 73:66-9 Ja 14 '15
- Typical and special construction used on Queens extension to New York elevated. *Il diags* Eng Rec 72:76-8 J1 17 '15
- Underrated contributor to steel construction; the detailer. R. Fleming. Eng N 74:653-4 S 30 '15
- Wind stresses in steel mill-buildings. R. Fleming. *diags* Eng N 73:210-14 F 4 '15
- Wind stresses in the steel frames of office buildings. A. Smith. *tables pls* W Soc E J 20:341-64 Ap '15
- Wind stresses in the steel frames of office buildings. W. M. Wilson and G. A. Maney. *tables Ill U Eng Exp Sta Bul* 80:1-88 '15; Abstract. Eng Rec 72:231-2 Ag 21 '15
- Wind stresses in the steel frames of office buildings; with discussion. W. M. Wilson. *tables pls* W Soc E J 20:365-90 Ap '15
- See also* Bridges, Iron and steel; Building; Cars, Steel; Concrete construction; Corrosion and anti-corrosives; Elevated railroads; Girders; High buildings; Hoisting machinery; Office buildings; Painting, Structural; Strains and stresses; Strength of materials; Towers, Steel
- Steel cutting**  
Special hardie cuts 20-inch steel pipe quickly. H. F. Johnston. Eng Rec 71:469 Ap 10 '15
- Steel hardening.** See Steel, Hardening of
- Steel houses.** See Houses, Steel
- Steel industry and trade**  
Billet prices for twenty-nine years. Iron Age 95:12 Ja 7 '15
- British India. U S Sp Cons Rep 73:205-14 '15
- British iron and steel trade in 1914. Iron Age 95:144-5 Ja 14 '15
- British steel and American competition. Engineer 118:603 D 25 '14
- Cambria steel company report for year ended December 31, 1914. Iron Age 95:356-7 F 11 '15
- Canada's reduced imports. Iron Age 96:364-5 Ag 12 '15
- Carnegie steel co. warehouse opens at Boston. *Il plan* Iron Tr R 56:620-2 Mr 25 '15
- Carnegie steel company's Boston warehouse, at Allston, Mass. *Il Iron Age* 95:670-2 Mr 25 '15
- Charts showing fluctuations in iron and steel prices for twenty years. Iron Tr R 56:8a Ja 7 '15
- Distribution of steel. Met & Chem Eng 13: 270-1 My '15
- Electric steel industry's present status. Iron Age 95:94-8 Ja 7 '15
- European iron and steel in 1914. Eng & Min J 99:269-70 F 6 '15
- Ford will build furnaces. Iron Tr R 56:1297 Je 24 '15
- French steel plants in war time. F. Miltoun. Iron Age 95:940-2 Ap 29 '15
- Full text of decision in the United States district court for the district of New Jersey. Iron Tr R 56:1171-1218 Je 10 '15
- Future of Germany's steel industry. H. H. Campbell. Iron Age 96:188-9 J1 22 '15
- Gain of ten furnaces. Iron Age 95:1306-7 Je 10 '15
- International steel trade situation. Engineer 119:233-4 Mr 19 '15
- Iron and steel prices for seventeen years. Iron Age 95:15-17 Ja 7 '15
- Iron and steel statistics. F. Hobart. Eng & Min J 99:70-1 Ja 9 '15
- Iron and steel wages and hours. Iron Age 95: 1265 Je 3 '15
- Iron, steel and coal in Dixie. H. S. Chamberlain. Iron Tr R 56:176-81 Ja 21 '15
- New finance for steel and iron: how the new federal reserve system can be utilized. I. F. Marcossou. Iron Tr R 56:9-15 Ja 7 '15
- New German steel syndicate. Iron Age 95:595 Mr 11 '15
- Pittsburgh iron and steel markets. B. E. V. Luty. map Eng & Min J 99:72-3 Ja 9 '15
- Production of steel ingots, castings and finished materials in 1914. Iron Tr R 57:325 Ag 12 '15
- Progress in the iron and steel industry and the electric furnace. K. G. Frank. Am Inst E E Pro 34:2547-54 O '15
- Railroads place orders with Canadian company. Iron Tr R 56:542-3, 578-80 Mr 18 '15
- Railways and the steel companies. Ry Age 58:682 Mr 26 '15
- Retailing steel mill products. *Il Iron Tr R* 56: 65-71 Ja 7 '15
- Some aspects of the iron and steel industry in Europe. U S Sp Cons Rep 71:1-43 '15
- Steadying effect of carrying stocks. Iron Age 94:1498 D 31 '14
- Steel industry and a year of war. E. Schrödter. Iron Age 96:828-9 S 16 '15; Same. Sci Am S 80:298 N 6 '15
- Steel industry and export trade. H. H. Campbell. Eng M 49:167-73 My '15
- Steel industry and the war. Met & Chem Eng 13:466-7 Ag '15
- Steel production in 1914. Iron Age 96:367-8 Ag 12 '15
- Steel production in the United States, 1914. Eng & Min J 100:233 Ag 14 '15
- Steel statistics for 1914. Eng & Min J 99:1072 Je 19 '15
- Steel trade and the war. E. T. Good. Iron Tr R 56:101-2 Ja 7 '15
- Steel trade's poor year. Met & Chem Eng 13: 7 Ja '15
- Survey of events in England: effects of the great war on iron and steel. J. Horton. Iron Tr R 56:54-6, 82 Ja 7 '15

**Steel industry and trade—Continued**

- Under-advertising of the steel business. G: H. Jones. Eng M 50:357-63 D 15; Same cond. Iron Age 96:1025-7 O 28 '15  
 United States steel corporation wins its suit. Iron Age 95:1299-1301+ Je 10 '15  
 Wages and hours of labor in the iron and steel industry. table Mach 21:954 Ag '15  
 War and the export trade. C. J. Stark. Iron Tr R 56:81-2, 90-4 Ja 7 '15  
 Warehouse business requires speed. Iron Tr R 57:578-9 S 23 '15  
 Why tool steel prices have gone up. E. C. Kreutzberg. Iron Tr R 57:987 N 18 '15  
*See also* Iron industry and trade; Rolling mills; United States steel corporation

**Steel ingots**

- Aluminum as a check to sulphide segregation in steel ingots. Iron Age 96:130 J1 15 '15  
 Bottom plates for pouring ingots. R. H. Irons. Iron Age 96:1221-2 N 25 '15  
 Commercial production of sound, homogeneous steel ingots and blooms. E. Gathmann. II diag. Am Inst Min E Bul 104:1485-92 Ag '15; Same cond. Iron Age 96:310-11 Ag 5 '15; Same abr. Iron Tr R 57:305-6 Ag 12 '15; Discussion. Am Inst Min E Bul 108:2511-12 D 15  
 Control of piping and segregation in ingots. H: M. Howe. II Iron Age 96:995-9; Discussion. E. F. Kenney. 96:999-1000 O 28 '15  
 Displaced volume and power in rolling mills. F. Denk. Iron Age 96:388-90 Ag 5 '15  
 How sulphides may exist in steel ingots. J. O. Arnold and G. R. Bolsover. Iron Tr R 57:737-8 O 14 '15; Discussion. G: F. Comstock. Iron Tr R 57:894+ N 4 '15  
 Ingot mold with a vacuum chamber. diag. Iron Age 95:1171 My 27 '15  
 Is duplexing slated for assassination? J. I. Peyton. II Met & Chem Eng 13:397 Je '15  
 Making sound steel commercially. E: F. Kenney. II diag. Iron Tr R 57:349-55+, 397-400 Ag 19-26 '15; Same (pt 2). Iron Age 95:1343-6 Je 17 '15; Discussion. H: M. Howe. Iron Tr R 57:400+ Ag 26 '15  
 Mechanical elimination of seams in steel products, notably steel rails. R. W. Hunt. Iron Age 94:1334-7 D 10 '14; Same. Iron Tr R 56:1073-6 D 10 '14; Same. Sci Am S 79:100-1 F 13 '15; Same cond. Eng N 72:1228-31 D 17 '14; Same cond. Eng Rec 70:636 D 12 '14; Same cond. Ry Age 57:1055-7 D 4 '14; Same cond. Ry R 56:85-8 Ja 18 '15; Same cond. Eng M 48:755-7 F '15; Discussion. Iron Age 94:1337-8 D 10 '14  
 Methods of preventing piping in steel ingots; abstract. E. Gathmann. diag Met & Chem Eng 13:656 O 1 '15  
 New ingot heating furnace. II diag Engineer 130:162-4 Ag 13 '15  
 Non-conducting sinkhead for ingot molds. diag Iron Age 96:195 J1 22 '15  
 Sound steel for rails and structural purposes. R. A. Hadfield. II J Fr Inst 179:119-40, 663-80 F, Je '15  
 Sound steel ingots and rails. G: K. Burgess and R. A. Hadfield. II Am Inst Min E Bul 98:455-68 F '15; Same. Iron Age 95:346-8 F 11 '15; Same. Iron Tr R 56:369-72 F 18 '15; Same cond. Ry R 56:362-4 Mr 13 '15; Abstract. Engineer 119:494 My 14 '15; Discussion. Am Inst Min E Bul 101:1112-15 My '15; Discussion. Engineer 119:501-2 My 21 '15; Discussion. Met & Chem Eng 13:445-6 J1 '15  
 Unsoundness in ladle test ingots. R. W. Hunt. II Iron Tr R 57:1037-9 N 25 '15; Same. Iron Age 96:1303-5 D 2 '15
- Steel metallurgy**  
 Acid open-hearth steel for castings. E. F. Cona. II Iron Age 95:551-3 Mr 11 '15  
 Comparative furnace efficiency. R. J. Weitlaner. Met & Chem Eng 13:357-61 Je '15  
 Conserving the manganese in pig iron in making steel. Iron Age 96:930 O 21 '15  
 Contributions of the chemist to the iron and steel industry. A. S. Cushman. J Ind & Eng Chem 7:934-5 N '15  
 Contributions of the chemist to the steel industry. G: W. Sargent. J Ind & Eng Chem 7:932-4 N '15  
 Cost of electric furnace steel; experience with the Snyder furnace. F. T. Snyder. II diag Iron Age 96:926-8 O 21 '15

- Duplex process of steel manufacture at the Maryland steel works. F. F. Lines. diag. plan. Am Inst Min E Bul 100:679-94 Ap '15; Same. Iron Age 95:730-3 Ap 1 '15; Same. Iron Tr R 56:876-9+ Ap 1 '15  
 Effect of titanium alloys on steel. G: F. Comstock. II Iron Tr R 57:391-5+ Ag 26 '15  
 Electric furnace steels for dynamic stresses. J. E. Schipper. II diag. Automobile 33:865-9 N 11 '15  
 Electric steel. F. T. Snyder. II diag. Iron Tr R 55:1077-82+ 1127-30+ D 10-17 '14  
 Electric steel direct from ore fines. A. C. Dalton. Iron Age 96:1184-5 N 18 '15  
 Electric steel furnace of new design; the Wile arc type. R. S. Wile. II diag. Iron Age 96:868-8 O 14 '15  
 Electrical steel by the acid process; abstract. A. Müller. Met & Chem Eng 13:640 S 15 '15  
 Electro-metallurgical industries as possible consumers of electric power. D. A. Lyon and R. M. Keeney. Am Inst Min E Bul 104:1707-30 Ag '15; Excerpts. Iron Age 96:300-3 Ag 12 '15; Discussion. Am Inst Min E Bul 108:2503-7 D '15  
 Furnace for making steel from ore. diag. Iron Tr R 57:743+ O 14 '15  
 Improved laboratory furnace. C: M. Johnson. II Iron Tr R 56:613-14 Mr 25 '15  
 Is duplexing slated for assassination? J. I. Peyton. II Met & Chem Eng 13:397 Je '15  
 Making sound steel commercially. E: F. Kenney. II diag. Iron Tr R 57:349-55+, 397-400 Ag 19-26 '15; Same (pt 2). Iron Age 95:1343-6 Je 17 '15; Discussion. H: M. Howe. Iron Tr R 57:400+ Ag 26 '15  
 Making steel by electricity. diag. Sci Am S 79:206-7 Mr 27 '15  
 Making steel by the duplex process. S. S. Martin. diag. Iron Age 95:76-8 Ja 7 '15  
 Manufacture of electric steel in the Stobie furnace. V: Stobie. Engineer 119:616-17 Je 18 '15  
 Occurrence and influence of nitrogen on iron and steel; abstract and discussion. N. Tschischewski. Iron Age 96:952-4 O 31 '15; Engineer 120:334-5 O 8 '15  
 Open hearth versus the electric furnace in the manufacture of commercial steels. S. Cornell. Met & Chem Eng 13:630-1 S 15 '15  
 Plant of the duplex process for making steel. J. K. Furst. diag. plans Am Inst Min E Bul 94:2493-514 O '14; Same cond. Iron Age 94:882-6 O 15 '14; Discussion. Am Inst Min E Bul 100:810-12 Ap '15  
 Steel making in the electric furnace. J. H. Gray. Iron Age 96:1238-9 N 25 '15; Excerpts. Met & Chem Eng 13:656-7 O 1 '15  
 Technical progress in iron and steel in 1914. J. E. Johnson, Jr. Iron Age 95:19-23 Ja 7 '15  
*See also* Bessemer process; Iron metallurgy; Metallurgy; Open hearth process; Rolling mills; Steel, Hardening of; Steel, Heat treatment of; Steel castings; Steel industry; Steel ingots; Steel works

**Exhibitions**

- Steel making in tablet form; wall panel. II Iron Age 96:416 Ag 19 '15  
 Steel painting. See Painting, Structural  
 Steel pipes. See Pipes, Steel  
 Steel plates. See Plates, Iron and steel  
 Steel poles. See Poles, Steel  
 Steel rails. See Rails  
 Steel reinforcing bars  
 Designing of reinforced concrete beams; some data tending to show errors in present theory and practice. L. J. Mensch. Eng & Contr 44:108-11 Ag 11 '15  
 How design and methods of buying influence the cost of steel reinforcing bars. A. D. Mellor. Concrete Cem 6:184-5 Ap '15  
 Tests for bond and electrolytic corrosion of painted reinforcing steel; abstract. H. A. Gardner. II Eng N 73:136-7 Ja 21 '15  
 U-bolt splice in heavy reinforcing bars. T: C. Atwood. diag. Eng N 73:218 F 4 '15  
*See also* Concrete, Reinforced  
 Steel square. See Square (instrument)

**Steel storage**

New steel warehouse of Joseph T. Ryerson & son, Jersey City. *Il* Iron Age 96:298-9 Ag 5 '15; Iron Tr R 57:270-1 Ag 5 '15

**Steel tape**

History of steel tapes. Eng N 72:1316-17 D 31 '14

Steel-tape repairs. *Il* Eng N 73:1130-1 Je 10 '15; Same cond. Eng & Min J 100:59-60 J 10 '15

**Steel ties. See Railroad ties, Steel****Steel towers. See Towers, Steel****Steel works**

Alternating-current controllers for steel mills. A. Simon. *Il* diags Am Inst E E Pro 34:731-51 My '15; Same. Iron Tr R 57:477-81+, 527-9 S 9-16 '15; Abstract. Elec W 65:1195-6 My 8 '15

Apprentice work in steel plants. B. W. Gilson. Iron Tr R 55:1138+ D 17 '14

Association of iron and steel electrical engineers 9th annual convention. Elec R & W Elec'n 67:521-4 S 18 '15

Blast-furnace plant auxiliaries and general arrangement. J. E. Johnson, Jr. plans Met & Chem Eng 13:495-9 Ag '15

Design features of the open hearth building of the Pennsylvania steel co., Steelton, Pa. diags plans Eng & Contr 42:602-4 D 30 '14

Development of the merchant rolling mill. J. R. George. *Il* diags Iron Tr R 56:1125-8+ Je 3 '15; Same. Iron Age 95:1282-6 Je 10 '15

Duplex process of steel manufacture at the Maryland steel works. F. F. Lines. diags plan Am Inst Min E Bul 100:879-94 Ap '15; Same. Iron Age 95:730-3 Ap 1 '15; Same. Iron Tr R 56:675-9+ Ap 1 '15

Engines and rolling mills in steel works of the Brier Hill steel co., Youngstown, O. *Il* Engineer 119:229-30 Mr 5 '15

Galveston Carnegie warehouse. E. C. Kreutzberg. *Il* Iron Tr R 56:169-70+ Ja 21 '15

Gas and steam engines and the turbine. J. E. Johnson, Jr. Iron Age 95:626-9 Mr 18 '15; Same. Sci Am S 79:294-5 My 8 '15

Germany's grip on French steel works. E. Schröder. Eng M 49:733-4 Ag '15

Heating an open-hearth furnace by tar. A. Greiner. Iron Age 95:1072-3 My 13 '15; Same. Iron Tr R 56:1017-18 My 20 '15

Homestead repair shops. *Il* plan Iron Tr R 56:659-65 Ap 1 '15

How to select your prime mover. G. Fisk. Iron Tr R 57:569-72+ S 23 '15

Industrial growth in the Cleveland district: new metal-working plants. Iron Age 95:98-9 Ja 7 '15

Low-pressure turbines in steel mills. F. G. Cutler. Power 40:827-8 D 8 '14

Mill controllers. H. F. Stratton. Am Inst E E Pro 34:599-614 Ap '15; Same. Iron Tr R 56:820-4 Ap 22 '15; Abstract, with discussion. Elec R & W Elec'n 66:778-80 Ap 24 '15; Discussion. Am Inst E E Pro 34:2868-94 N '15

Modern steel plant at Massillon. *Il* diags plan Iron Tr R 56:83-7 Ja 7 '15

New iron and steel works construction. Iron Age 95:30-2 Ja 7 '15

Newcastle steel works, New South Wales. *Il* Engineer 120:223-4, 226 S 3 '15

Pennsylvania's rail and structural mill at Steelton. *Il* plan Iron Age 96:617-22 S 16 '15

Plant of the duplex process for making steel. J. K. Furst. diags plans Am Inst Min E Bul 94:2498-514 O '14; Same cond. Iron Age 94:882-6 O 15 '14; Discussion. Am Inst Min E Bul 100:810-12 Ap '15

Purchased power for the steel mill; economic advantages of central station current. C. S. Lankton. Iron Tr R 57:578-5 S 23 '15

Resicza steel works, a likely war goal. *Il* Iron Age 96:516-18 S 2 '15

Rush work at Minnesota steel plant, Duluth. *Il* Iron Tr R 57:538-8 S 23 '15

Sheet bar and special steel plant: Central steel company, Massillon, Ohio. *Il* diags plans Iron Age 95:52-5 Ja 7 '15

Shops for repair purposes at Gary. *Il* plan Iron Tr R 56:277-81+ F 4 '15

Six etchings of European iron and steel works. J. Pennell. Iron Tr R 56:57-64 Ja 7 '15

Steel plant in southern California; oil-burning open-hearth furnace. *Il* Iron Age 95:1110-12 My '15

Steel plant repair system. B. D. Quarrie. Iron Age 94:1316-17 D 3 '14

Trumbull steel co. doubles capacity of sheet plant. R. V. Sawhill. *Il* Iron Tr R 56:321-5+ F 11 '15

Waste-heat boilers in steel plants. C. J. Bacon. diags Iron Age 95:1349-52 Je 17 '15; Abstract. Iron Tr R 56:1123-4 Je 3 '15

Water-cooled equipment for sheet mills. *Il* diags Iron Age 95:441-3 F 25 '15

*See also* Rolling mills

**Steeple. See Towers****Stefánsson, Vilhjálmur, 1879-**

Stefánsson's new found land. H. J. Spinden. *Il* map Sci Am 118:289+ O 2 '15

**Steinmetz, Charles Proteus, 1865-**

Next president of Illuminating engineering society. *por* Elec W 65:1572-3 Je 13 '15

Portrait. Elec R & W Elec'n 66:1185 Je 12 '15

**Stellite**

Brazing stellite to machine steel. Mach 21:421 Ja '15

Stellite, a cobalt-chromium alloy of great hardness. E. Haynes. Eng & Min J 100:711 O 30 '15

**Stencils and stencilling**

Outgrowths of letterpress; stenciled and applique pennants. G. Sherman. *Il* Inland Ptr 55:177-82 My '15

**Stereochemistry**

Interpretations of some stereochemical problems in terms of the electronic conception of positive and negative valences. H. S. Fry. Am Chem Soc J 37:855-92 Ap '15

*See also* Atoms; Chemistry, Physical; Isomerism

**Stereopticon**

Novel dissolving picture-projecting apparatus. R. G. Skerrett. *Il* Sci Am 112:612 Je 19 '15

**Stereoscopic telemeter**

Measurement of distances in war. A. Keller. *Il* diags Sci Am S 79:324-5 My 22 '15

**Stereoscopic views**

Anaglyphs. Sci Am 113:63 J 17 '15

Superposed stereoscopic pictures that need no stereoscope. Sci Am 113:210 S 4 '15

**Stereotyping**

Rivett fong machine. A. W. Birdsall. *Il* Inland Ptr 55:95-6 Ap '15

Syndicate stereotyping. A. W. Birdsall. Inland Ptr 54:360 D '14

*See also* Electrotyping

**Stevens bill**

Bill for block signals, automatic stops, steel cars, headlights and investigations. Ry R 56:125-7 Ja 23 '15

**Stevens Institute of technology**

Contributions of Stevens tech to the welfare and progress of the country. F. D. Furman. Stevens Ind 32:31-47 Ja '15

Stevens in history. J. H. Cuntz. Stevens Ind 32:19-30 Ja '15

Student life at Stevens. R. F. Homhan. Stevens Ind 32:57-63 Ja '15

**Stillman, Thomas Bliss, 1852-1915**

Sketch. F. J. Pond. *por* J Ind & Eng Chem 7:804-5 S '15

**Stills. See Distillation****Stock cars**

End construction of Canadian Pacific stock cars. diags Ry Age (Mech ed) 89:29-30 Ja '15

Thirty-ton stock car for the Canadian Pacific Ry. R. W. Burnett. *Il* diag Ry R 55:686-7 D 5 '14

**Stock yards**

*See also* Chicago—Stock yards

**Stockings. See Hosiery**

Stockpile trestle of wood. O. Gustafson. *Il* diags Eng & Min J 98:1008-4 D 5 '14

**Stockroom records**

Handling stock by systematic methods. *Il* Metal Work 82:810-12 D 18 '14

**Stocks**

Discount on stock. S. Walton. J Account 20:238-41 S '15

Treasury stock. S. Walton. J Account 19:892-7 My '15

**Stokers, Mechanical**

- Automatic chain grate stokers. 11 diags Eng M 50:sup5-7 O '15; Elec W 66:1106 N 13 '15
- Characteristics of automatic stokers. R. J. S. Piggott. Ind Eng 15:13-14 Ja '15
- Coal and air regulation with stokers. W. D. Lewis. Power 42:633 N 16 '15
- Coking coal chain stoker. 11 Iron Age 95:1280-1 Je 10 '15
- Comparative tests of stoker- and hand-fired boilers. H. S. Knowlton. 11 Power 41:300-1 Mr 2 '15
- Hanna locomotive stoker. 11 diags Ry R 56:770-1 Je 5 '15
- Kokomo underfeed stoker. 11 diags Power 42:195 Ag 10 '15
- Locomotive boiler design and mechanical stokers. Engineer 120:155 Ag 13 '15
- Locomotive stokers: American railway master mechanics' association committee report. Ry R 56:307 Je 12 '15
- Mechanical fireman; Kincaid stoker. 11 diag Colliery 36:109-10 S '15
- Mechanical stokers; committee report of International railway fuel association. Ry Age 58:1113-14 My 28 '15; Same. Ry Age (Mech ed) 89:277-80 Je '15
- Mechanical stokers for locomotives. Power 41:827 Je 15 '15
- Mechanical stokers on American locomotives. Engineer 119:42-3, 60-1, 116-17, 163 Ja 8-13, 29, F 12 '15
- Mechanical stoking of locomotives; with discussion. W. S. Bartholomew. 11 diags J Fr Inst 180:253-310 S '15
- New Kincaid stoker. 11 diag Power 41:42-3 Ja 12 '15
- Nosmoke chain-grate stoker. 11 diags Power 42:19-20 J 6 '15
- Reducing costs with mechanical stokers. C. C. Brinley. 11 Eng M 50:276-92 N '15
- Relation of mechanical stokers to the fuel problem. Ry R 56:700-1 My 22 '15
- Side-feed stokers. O. Monnett. diags Power 40:802-4 D 8 '14
- Stationary boiler stoker. 11 Iron Age 95:136 Ja 14 '15
- Stoker for scientific firing. 11 Iron Tr R 56:127-4 Ja 14 '15
- Tests on a recent type of chain grate stoker and new method of baffling Stirling boilers. J. A. Hunter. diags Eng Soc W Pa 31:1-10; Discussion. 31:10-55 F '15; Abstract. Am Soc M E J 37:348-51 Je '15
- Traveling-grate stoker with revolving disk grate bars. 11 Elec W 66:487 Ag 28 '15
- Underfeed stoker. 11 Elec W 65:950 Ap 10 '15
- Underfeed stokers. J. Van Brunt. diag Power 41:132 Ja 26 '15
- Underfeed stokers. O. Monnett. diags Power 40:338-40 D 15 '14
- Westinghouse underfeed stoker. 11 diags Power 40:841-2 D 15 '14
- What the stoker has done for the locomotive: discussion. C. F. Street. Ry R 56:69 Ja 9 '15; Same. Ry Age 58:59 Ja 8 '15; Same cond. Am Soc M E J 37:32-3 Ja '15; Same cond. Ry Age (Mech ed) 89:11 Ja '15
- What the stoker has done for the locomotive: discussion. L. A. Averill. Ry Age 58:59-61 Ja 8 '15; Same cond. Am Soc M E J 37:33-4 Ja '15; Same cond. Ry Age (Mech ed) 89:11-12 Ja '15
- Stone**
- Itakolumito, a flexible stone. Sci Am 113:312 Ap 3 '15
- Removing stains from stonework. Bldg Age 37:41 My '15
- See also Building stones; Granite; Lime-stone; Quarries and quarrying
- Stone, Concrete. See Concrete stone
- Stone bridges. See Bridges, Stone
- Stone lands**
- United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 1308-33 '15
- Stone pavements. See Pavements, Stone**
- Stopcocks**
- Street stop-cock of the Boston water-works department. G. H. Finneran. diags Eng N 78:77 Ja 14 '15

Vacuum and pressure stopcocks. M. Randall and F. R. v. Bichowsky. diags Am Chem Soc J 37:137-44 Ja '15

**Stoping methods. See Mining engineering**

**Storage. See Stores systems**

**Storage batteries**

- A. C. service from battery. J. A. Walton. diags Elec W 66:975-6 O 30 '15
- Battery-exchange service in Boston. Elec R & W Elec'n 67:105 J 17 '15
- Battery reserve in an alternating-current system. diags Elec W 66:465-6 Ag 28 '15
- Dry storage battery. 11 Elec R & W Elec'n 67:682-3 O 9 '15
- Edison storage battery ruggedness. 11 Elec R & W Elec'n 67:646-7 O 2 '15
- Edison submarine boat storage battery. H. T. Wade. 11 Sci Am 112:450-7 My 15 '15
- Effect of porosity on the output of storage batteries; abstract. C. Heim. Elec W 66:800 S 11 '15
- Information on storage battery care. diag Automobile 32:671-2 Ap 15 '15
- Low-gravity circuit for storage battery. W. E. Dixon. diag Power 41:720 My 25 '15
- Modern submarines in war and peace. S. Lake. Int Marine Eng 20:502-3 N '15
- Nickel-iron-alkaline cells for high-discharge-rate and submarine service. 11 diag Elec W 66:1103-4 N 13 '15
- Smashing point of storage battery. Elec R & W Elec'n 66:79 Ja 9 '15
- Smelting storage-battery sediment. W. C. Smith. Eng & Min J 100:18 J 3 '15
- Storage batteries for handling peak loads. E. Brown. Power 41:470-1 Ap 6 '15
- Storage batteries for radio service. Elec R & W Elec'n 66:852 F 20 '15
- Storage battery for electric plants. J. F. Springer. 11 Munic J 37:915-17 D 24 '14
- Storage battery serving combined alternating-current and direct-current system. 11 plan Elec W 65:1305-6 My 22 '15
- Storage-battery voltage regulation. C. S. Redding. 11 diags Elec W 65:1134-5 My 1 '15
- Submarine power plant. A. Hoar. 11 Sibley J 30:59-63 N '15
- Unused storage battery should have care. Automobile 32:716-17 Ap 22 '15
- See also Electric batteries

**Bibliography**

- List of works relating to storage batteries, 1900-1915. G. S. Maynard. N Y Pub Lib Bul 19:365-407 Ap '15

**Charging**

- Auxiliary equipment for charging one to twenty cells. 11 diag Elec W 65:169 Ja 16 '15
- Charging batteries from 120-volt circuit. Horseless Age 35:30 Ja 6 '15
- Charging small storage batteries. G. E. Miles. diags Power 41:757 Je 1 '15
- Constant-potential charging system effects saving in Chicago garage. 11 Elec W 65:865-6 Ap 3 '15
- Constant-potential charging system in Chicago. 11 Elec R & W Elec'n 66:277-8- F 6 '15
- Construction of a vibrating rectifier for charging automobile ignition batteries. G. Fraasa. diags Sci Am S 80:108-9 Ag 14 '15
- Control-board for series-parallel battery charging. 11 Elec R & W Elec'n 67:686 O 9 '15
- Electric charging equipment in the new plant of the Ward bread company, Boston. 11 Elec R & W Elec'n 66:58-7 Ja 2 '15
- Home-made charging panel for small batteries. 11 Elec W 66:591-2 S 11 '15
- How to pick the positive for battery charging. F. I. Hoffman. Horseless Age 36:278-7 S 15 '15
- Large charging installation for Cambridge (Mass.) bakery. 11 Elec W 65:239 Ja 23 '15
- Low-voltage battery-charging device. 11 diag Elec W 65:437 F 18 '15
- Small battery-charging outfits for automobile ignition and lighting batteries. 11 Elec R & W Elec'n 67:300-1 Ag 14 '15; Elec W 66:422-3 Ag 21 '15
- Small mercury-vapor rectifier for charging automobile lighting batteries. 11 Elec R & W Elec'n 66:1010 My 29 '15



- Storage batteries—Charging—Continued**  
**Storage battery charging—magnet recharging.**  
 P. M. Heldt. *Il diag* Horseless Age 35:442-6 Mr 31 '15  
**Winding for magnet chargers—charging storage batteries.** Horseless Age 35:143 Ja 27 '15
- Manufacture**  
**Lead poisoning in manufacture of storage batteries; abstracts.** A. Hamilton. Horseless Age 35:480 Ap 7 '15; Elec R & W Elec'n 66:1035 Je 5 '15; Eng M 49:442 Je '15
- Storage battery cars.** See Motor cars (railroad)  
**—Storage battery**  
**Storage battery locomotives.** See Electric locomotives
- Storage racks**  
**Making rack for storage of sheet metal.** *diag* Metal Work 83:313-14 F 36 '15  
**Miscellaneous stands for use in the foundry.** A. Hill. *diag* Foundry 48:301-3 Ag '15  
**System of flexible, fireproof storage racks.** *Il Ind Eng* 14:417 N '14
- Store fronts**  
**Store front of Hanan & son, Boston.** *Il plan Arch & Bldg* 47:144-7 Ap '15
- Stores**  
**Group of village stores at Chatham, Mass.; views and plans.** Brickb 24:259-60 O '15  
 See also Department stores; Store fronts
- Stores, Cooperative.** See Cooperation
- Stores systems**  
**Efficiency in the stores department.** W. G. Astle. *Il Elec Ry J* 46:906-10 O 30 '15  
**Part number system for manufacturers.** C. E. Fairbanks. *Ind Eng* 15:15-16 Ja '15  
**Perpetual inventory in practical stores operation.** J. B. Green. *Eng M* 48:879-88 Mr '15  
**Positive identification of tool steels.** *Iron Age* 96:200 Jl 22 '15  
**Precedent versus progress in the stores department.** G. G. Yeomans. *Ry Age* 59:237-8 Ag 6 '15  
**Railroading from a general storekeeper's point of view.** J. G. Stuart. *Ry R* 57:700-2 N 27 '15  
**Signal and supply departments.** C. R. Ahrens; R. D. Long; A. G. Shaver. *Ry R* 57:120-4 Jl 24 '15
- Storeroom organization and management; mnemonic symbolizing.** W. G. Astle. *Il Iron Age* 96:457-60 Ag 26 '15; Same. *Metal Work* 84:323-4 S 10 '15
- System in a factory stock department.** G. H. Culver. *Il Eng M* 49:174-83 My '15
- Systematic purchase and care of mill supplies.** E. C. Church. *Textile World* 49:207-9 My '15  
 See also Pattern storage; Storage racks
- Storm King highway**  
**Storm King highway, New York.** H. E. Breed. *Il map Eng N* 74:731-4 O 14 '15
- Storms**  
**Cincinnati buildings suffer from wind storm.** C. M. Stegner. *Il map Eng N* 74:140-2 Jl 16 '15  
 See also Hurricanes; Rain; Thunderstorms; also Galveston, Texas—Hurricane, 1915; New Orleans—Hurricane, 1915
- Stove founders' national defense association**  
**Annual meeting, New York city, May 11.** *Metal Work* 83:744 My 21 '15
- Stove manufacturers, National association of.** See National association of stove manufacturers
- Stove plates**  
**Grinding and polishing stove plate trimmings.** F. W. Hobbs. *Foundry* 43:236-7 Je '15
- Stoves**  
**Cooking and heating stoves in foreign countries.** U S Sp Cons Rep 63:1-63 '14  
**First American heating stove.** *diag Am Gas Light J* 103:33 Jl 19 '15  
**Heating systems in the United Kingdom; open-grate fire vles with coal and wood stove.** *Metal Work* 83:697-8 My 14 '15  
**Lecture on stoves.** W. H. Perkins. *Metal Work* 82:801 D 18 '14
- Stove trade to honor Benjamin Franklin.** *Il Metal Work* 84:38-9 Jl 18 '15
- Stoves in Argentina.** *Metal Work* 83:536 Ap 9 '15
- Test on melting shot iron in the cupola; experiment in a stove foundry.** G. E. Pickup. *Il Foundry* 42:467-8 D '14  
 See also Electric stoves; Gas stoves; Heating
- Stoves, Blast furnace.** See Blast furnace stoves
- Straightening**  
**Cold straightening of rails.** R. W. Hunt. *Ry Age* 59:726 O 22 '15
- Straightening a tall leaning factory chimney by a new method.** T. S. Clark. *diag Eng N* 73:266-7 F 11 '15
- Straightening machines**  
**Axle and armature-shaft straightener.** J. N. Graham. *diag Elec Ry J* 46:238-9 Ag 7 '15  
**One pass straightening machine.** *Il Iron Tr R* 56:919 My 6 '15
- Strainers**  
**Motor-operated twin strainer.** *Il Power* 41:3-9 Ja 5 '15
- Strainometers**  
**Universal strainometer of simple design.** S. H. Graf. *Il Iron Age* 96:134-5 Jl 15 '15
- Strains and stresses**  
**Allowing for impact in bridge calculations.** J. D. W. Ball. *diag Engineer* 120:151-3 Ag 13 '15  
**Analysis of stresses in Chicago elevated steel car.** H. A. Johnson. *diag Elec Ry J* 44:1299-1300 D 12 '14  
**Behaviour of metals under stress.** F. C. A. H. Lantaberry. *Engineer* 119:63 Ja 15 '15  
**Calculation of centrifugal stresses in turbine rotors; abstract.** W. Kerr. *Am Soc M E J* 37:298-9 My '15  
**Chart of equivalent uniform loads for railway bridges.** D. B. Steinman. *Eng N* 73:780-2 Ap 22 '15  
**Convex and concave drum heads.** D. Hogan. *Power* 41:450 Mr 30 '15  
**Data on the strength and elastic properties of concrete-filled pipe columns.** F. W. Swain and A. F. Holmes. *Eng & Contr* 44:184-5 S 8 '15  
**Design methods in concrete construction.** J. Cochran. *Concrete Cem* 6:33-4, 83-5, 145-3, 190-2 Ja-Apr '15  
**Design of beams, girders and trusses.** E. McCullough. *diag Bldg Age* 36:27-8 Jl; 33-4 Ag; 29-30 S; 37-9 O; 37-9 N; 27-9 D '14; 37:39-41 Ja; 31-3 F; 27-8 Mr; 49-50 Ap; 49-50 My; 47-8 Je; 45-6 Jl; 27-8 Ag; 29-30 S; 37-8 N; 51-2 D '15  
**Design of rectangular concrete beams.** H. Harding. *Am Soc M E J* 37:529-31 S '15  
**Designing a steel dome for the horticultural palace at the Panama-Pacific international exposition.** A. W. Earl and T. F. Chace. *diag Eng N* 74:203-12 Jl 29 '15  
**Designing of reinforced concrete slabs subjected to bending and compression.** A. Bull. *Eng & Contr* 43:454-6 My 19 '15  
**Determination of stresses in and design of cast iron lining for subaqueous tunnels.** P. A. N. Seurot. *diag Eng & Contr* 43:90-2 F 8 '15  
**Determining the stresses in an offset beam.** W. L. Cathcart. *Mach* 21:872 Ap '15  
**Diagram for net section of riveted tension members.** T. A. Smith. *Eng N* 73:393 My 6 '15
- Eccentric heel joint of roof truss; solution of problem.** E. H. Rockwell. *Eng N* 74:796-8 O 21 '15
- Economic design of concrete slabs.** J. N. Jensen. *Eng Rec* 71:170-1 F 6 '15
- Effect of the end connections on the distribution of stress in certain tension members.** C. Batho. *Il diag J Fr Inst* 180:129-72 Ag '15; Abstract. *Am Soc M E J* 37:561-2 S '15; Abstract (Tests prove lug angles valueless for insuring uniform stress distribution). *Eng Rec* 72:512-14, 608 O 23, N 13 '15
- Effects of quenching mediums.** H. V. Wille. *Il Iron Tr R* 57:93-4 Jl 8 '15; Same cond. *Iron Age* 96:190-1 Jl 22 '15
- Elastic curve applied to the design of the Scotoville bridge.** D. B. Steinman. *Eng Rec* 72:268-60 Ag 28 '15
- Endurance of metals under repeated stresses; some new facts, and a new method of testing.** *diag Locomotive* 30:130-42 Ja '15

**Strains and stresses—Continued**

- Equivalent uniform loads for long-span bridges. D. B. Steinman. Eng N 73:370 F 25 '15
- Experiments to determine stresses in parts of rope falls. C. S. Adams. Eng Rec 72:425-6 O 2 '15
- Experiments to determine the forces imposed on a truck side frame and the stresses produced. L. E. Endsley. II diags Ry R 56:460-3, 494-7 Ap 3-10 '15; Same cond. Ry Age (Mech ed) 89:127-9 Mr '15
- Failure of materials under repeated stress; abstract. F. H. Moore and F. B. Seeley. Iron Age 96:22-3 Jl 1 '15
- Failure of structural brasses. P. D. Merica and R. W. Woodward. Metal Ind n s 13:459-61 N '15 (to be cont)
- Fixing the elastic limit standard. T. D. Lynch. II Iron Tr R 57:70-81+ Jl 8 '15
- Full-load secondary stresses in elevated-railway bents. L. R. Manville. Eng N 74:549-51 N 11 '15
- Generalized form of Hooke's law. E. R. Hedrick. Eng N 74:543-3 S 16 '15
- Graphical analysis of arches with fixed ends greatly simplified. C. S. Whitney. Eng Rec 72:324-6 S 11 '15
- Is a part stronger than the whole? R. Fleming. diags Eng N 74:1026-7 N 25 '15
- Lateral flexure of hollow pieces; abstract. H. Lossler. diags Am Soc M E J 37:387-8 My '15
- Lateral stresses on rails in curved tracks. G. L. Fowler. II Ry Age 59:319-22 Ag 20 '15
- Magnetic studies of mechanical deformation in certain ferromagnetic metals and alloys. H. Hanemann and P. D. Merica. II Am Inst Min E Bul 108:2371-85 D '15
- Maximum stresses in tension reinforcement. M. J. Lorente. Eng & Contr 42:366 O 14 '14
- Mechanics of reinforced concrete under flexure in beam and slab types. C. A. P. Turner. Boston Soc C E J 1:383-94 S '14; Discussion. 1:499-508; 2:23-47 N '14, Ja '15
- Moments at eccentric heel-joint of roof truss. E. Godfrey. Eng N 74:399 Ag 26 '15
- Nomographic charts for simple beam design. C. D. Conklin, jr. Eng Rec 71:809 Je 26 '15
- Nomographic solutions for formulas of various types. R. C. Strachan. Eng Rec 71:807-9 Je 26 '15
- Pressures on piles supporting masonry. R. P. V. Marquand. diags W Soc E J 20:541-7 Je '15; Same. Eng & Contr 44:392-3 N 17 '15
- Ratio of circumferential to longitudinal stresses in boiler joints. J. K. Linderhurst. Power 41:611-12 My 4 '15
- Reactions in a three-legged stiff frame with hinged column bases; with discussion. N. M. Stineman. W Soc E J 19:881-820 N '14
- Rectangular pressure vessels. H. J. Vander Eb. Locomotive 30:164-9 Ap '15
- Reinforced-concrete conduit analysis simplified by theory of displacements. C. S. Whitney. Eng Rec 72:486-8 O 16 '15
- Results of some tests of I-beam connections. C. S. Whitney. diags Eng & Contr 44:35-7 Jl 14 '15
- Secondary stresses and other problems in rigid frames: a new method of solution. G. A. Maney. diags Minn U Bul 1:1-17 '15
- Seventy-nine-ton derrick car lowers itself 50 feet in twenty-five minutes. A. S. Beale. II Eng Rec 72:78-9 Jl 17 '15
- Shear in beams. E. Jonson. Eng Rec 71:25 Ja 2 '15
- Shrinkage and time effects in reinforced concrete. F. R. McMillan. II Minn U Bul 3:1-41 '15; Abstracts. Eng N 73:502-3 Mr 11 '15; Eng Rec 73:251-2 Ag 28 '15; Eng & Contr 44:306-10 O 20 '15
- Simple method of determining the stresses in concrete arches due to temperature and rib shortening. H. R. Thayer. Eng & Contr 44:173-4 S 1 '15
- Special methods of reinforced concrete design; with discussion. M. J. Lorente. diags Boston Soc C E J 2:205-32 S '15
- Steel headframe at no. 9 shaft, Republic mine, Vulcan, Mich. F. L. Burr. II diags Eng & Min J 100:430-5 S 11 '15
- Stress analysis of the Chicago steel car. E. W. Rettger and S. G. George. Elec Ry J 45:291-2 F 6 '15
- Stress distributions in engineering materials; report to the British association. Engineer 120:354-5 O 8 '15
- Stresses in a rigid frame of two columns and a truss; with table. F. Freyhold. Eng N 73:1031-3 My 27 '15
- Stresses in convex heads. F. F. Couch. diags Power 42:675-7 N 16 '15
- Stresses in convex heads. F. G. Gasche. Power 41:59 Ja 12 '15
- Stresses in convex heads. H. J. Vander Eb. Power 40:817-18 D 8 '14
- Stresses in steam pipes. S. U. Tuspín. Elec W 65:926-7 Ap 10 '15
- Stresses in the mine roof. R. D. Hall. diags Am Inst Min E Bul 105:2013-21 S '15
- Stresses in the Panama canal cranes. Eng N 74:86-3 Jl 8 '15
- Struts and tie-rods in motion; abstract. H. Mawson. Am Soc M E J 37:659-60 N '15
- Sudden cooling of boilers in cases of low water. R. N. Blackburn. Power 42:596-8 N 16 '15
- Tie-rods for floor arches; a criticism of current practice. F. N. Kneass. diags Eng N 73:518-19 Mr 18 '15
- Torsion strength of reinforced concrete beams. Am Soc M E J 37:49-50 Ja '15
- Torsional strengths of guy anchor rods. T. Croft. diags Elec W 65:1607-9 Ja 19 '15
- Tower of Jewels at exposition a 435-foot skyscraper on two-hinged arches. F. S. M. Harris. II diags Eng & Contr 43:47-54 Ja 30 '15; Same cond. Eng Rec 71:112-16 Ja 23 '15; Same cond. Eng N 73:806-72 My 6 '15
- Wind stresses in skew bridges. J. P. J. Williams. Eng N 73:622-6 Ap 1 '15
- See also* Arches; Bridge design; Bridges; Building; Columns; Earth pressure; Elasticity; Girders; Graphic statics; Rails—Stresses; Riveting; Roofs; Strength of materials; Torque; Trusses; Wind pressure
- Strassburg, Alsace**
- Dual ownership of public utilities in Alsace. M. A. Jewett. Munic. Eng 49:65-6 Ag '15
- Stream flow**
- Long-term variations in stream flow, Croton and Hudson rivers. E. H. Sargent. Eng N 72:1119 D 3 '14
- See also* Stream measurement; Water flow
- Stream measurement**
- Collection and use of stream discharge data in Pennsylvania. R. A. Boehringer. Eng Rec 71:109-10 Ja 23 '15
- Diagram for estimating flow in channels and conduits. G. D. Fish. Eng N 73:732-4 Ap 15 '15
- High coefficients of roughness for natural river channels. R. E. Horton. Eng N 73:827-8 Ap 29 '15
- Relation of stream gaging to the science of hydraulics; abstract. C. E. Pierce and R. W. Davenport. Am Soc M E J 37:814 O '15
- Small automobile opens up new opportunities in government stream gaging work. E. A. Porter. II Eng Rec 71:490-1 Ap 17 '15
- Stream gaging by titration; comparative tests of new chemical and standard mechanical methods of gaging stream flow. L. W. Collet, R. Mellet and O. Lütchg. diag plans Eng & Contr 42:270-3 S 16 '14
- Street accidents**
- Diminished illumination and accidents in the streets. Illum Engr 8:300-1 Jl '15; Same cond. Am Gas Light J 103:88 Ag 9 '15
- London traffic dangers. Sci Am S 79:213 Ap 3 '15
- See also* Automobile accidents; Street railroads—Safety devices and measures
- Street car lighting.** *See* Car lighting
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- Albany service order. Elec Ry J 46:334-5 Ag 21 '15
- All-service cars for East Liverpool. II plan Elec Ry J 45:765-6 Ap 17 '15
- All-steel one-man car. II Elec Ry J 46:72-3 Jl 10 '15
- Balanced door-operating mechanism. J. Sutherland. II Elec Ry J 45:1038-9 My 29 '15
- Bay State combination car. II diag Elec Ry J 46:854-7, 1068-73 O 23, N 27 '15
- Bolts and screws. Elec Ry J 46:449-50 S 11 '15

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Car maintenance records at Los Angeles. *Elec Ry J* 45:1214-15 Ja 26 '15

Center-entrance cars for Wilkes-Barre, Pa. *Il Elec Ry J* 45:518 Mr 13 '15

Convertible car for general service. *Il Elec Ry J* 46:71 J1 10 '15

Converting open cars into the end-entrance type. A. C. Colby. *Il plan Elec Ry J* 46:451-2 S 11 '15

Correct-posture seats. *Il diags Eng M* 49:588 J1 '15

Development of a light, low-floor car for San Francisco. J. M. Yount. *Il Elec Ry J* 46:515 S 18 '15

Dubuque remodels cars for one-man operation. *Il plan Elec Ry J* 46:1090 N 27 '15

Economies in operating small cars. J. F. Layng. *Elec Ry J* 46:979-80 My 22 '15

Economies of the light car and of ball bearings. A. V. Farr. *Elec Ry J* 46:239-40 Ag 7 '15

Experience with the one-man electric car in a small city. R. M. Howard. *Il Elec Ry J* 45:233-4 Ja 30 '15

Experimental open-car reconstruction in Atlantic City. G. F. Faber. *Il diags Elec Ry J* 46:110-11 J1 17 '15

Front entrance, center-exit car for Cleveland. *Il plan Elec Ry J* 46:364-6 F 20 '15

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Improvements in the low-floor car. *Il diags Elec Ry J* 46:4-7 J1 3 '15

Inclosed prepayment cars for Baltimore. *Il diags Elec Ry J* 46:88-9 Ja 9 '15

Kansas City's new cars. R. L. Weber. *Il Elec Ry J* 46:771-2 O 9 '15

Los Angeles illuminated end destination sign with car and run numbers. E. L. Stephens. *Il Elec Ry J* 45:1169 Je 19 '15

Low-floor California-type car. W. B. Farlow. *Il Elec Ry J* 45:1016-18 My 29 '15

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New cars for Kansas City. *plans Elec Ry J* 45:850-1 My 1 '15

New cars for New Orleans. *Il plan diags Elec Ry J* 45:270-4 F 6 '15

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New York municipal car—brakes and auxiliaries. *Il diags Elec Ry J* 45:872-80 My 8 '15

New York municipal car—motors, control, conduit and collectors. *Il diags Elec Ry J* 45:496-503 Mr 13 '15

New York municipal car—the lighting. W. G. Gove. *Il Elec Ry J* 45:614-18 Mr 27 '15

New York municipal car—trucks, brake rigging and draft gear. *Il diags plan Elec Ry J* 44:1376-81 D 26 '14

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Small car versus the large car. D. C. Hershberger. *Elec Ry J* 46:394-5 S 4 '15

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Dust prevention and street cleaning. W. H. Connell. *Good Roads n s* 9:103-6 Mr 6 '15

Dust suppression and street cleaning practice in Philadelphia. W. H. Connell. *Good Roads n s* 10:249-52 N 6 '15; Same abr. *Eng & Contr* 44:238-42 S 29 '15

Manchester street cleaner. *Il Munic J* 39:375-6 S 2 '15

Methods of street cleaning. E. D. Very. *Good Roads n s* 9:221-3 Je 5 '15

Milwaukee bureau of street sanitation. *Munic J* 37:888-90 D 17 '14

Notes on the development of street cleaning methods. E. D. Very. *Eng & Contr* 42:394-6 O 21 '14; Abstract. *Eng N* 72:831 O 22 '14

Philadelphia street cleaning by contract. *Eng N* 74:6-7 J1 1 '15

Street cleaning data from thirty-one cities. *Munic J* 38:37-8 Ja 14 '15

Street cleaning in Calgary. *Il Munic Eng* 49:72-3 Ag '15

Street cleaning in Calgary. W. E. Hardenburg. *Il Munic J* 38:651-2 My 13 '15

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Street cleaning in Grand Rapids, Mich. *Il Munic J* 39:218 Ag 12 '15

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Street cleaning notes. *Munic J* 37:851 D 10 '14

Tables of street cleaning statistics furnished by officials of 150 cities. *Munic J* 37:833-45 D 10 '14

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Comparative cost of street sweeping and sprinkling with mules and with motors. *Munic Eng* 48:305 My '15

Cost of cleaning various kinds of city pavements. *Eng N* 73:889 My 6 '15

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Street cleaning in Des Moines. *Munic J* 38:313 Mr 11 '15

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Street cleaning by motor apparatus. G. L. Rinkliff. *Il Munic J* 38:38-4 Ja 14 '15

Street cleaning by motors in Houston. *Munic J* 38:468-9 Ap 8 '15

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Diminished illumination and accidents in the streets. *Ilum Engr* 8:300-1 JI '15; Same cond. *Am Gas Light J* 103:88 Ag 9 '15

Effective illumination of streets. P. S. Millar. *diags* 11 pls *Am Inst E E Pro* 34:1379-98 JI '15; Abstract. *Elec W* 66:62-4 JI 10 '15; Discussion. *Am Inst E E Pro* 34:3063-62 D '15

Electric lighting data: station equipment—amount of current used for street lighting and other purposes—fuel statistics—number and kind of lamps used for street lighting—ornamental lighting—rates. *Munic J* 38:884-94 Je 24 '15

Engineers' report on Milwaukee street lighting. *Elec R & W Elec'n* 66:1308 Je 26 '15

Experience with mazda gas-filled street lamps. C. H. Shaw. *Elec R & W Elec'n* 66:416 Mr 6 '15

Flame-arc lighting of Indianapolis' streets. *Il Elec W* 66:452-3 Ag 28 '15

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Glare as a factor in street lighting. A. J. Sweet. *Elec R & W Elec'n* 66:439-43 Mr 6 '15

High intensity street lighting of European cities compared with New York. C. F. Lacombe. *Ilum Eng Soc* 9:614-32 no 7 '14

Improved street lighting at Hot Springs, Ark. *Il diag Elec W* 65:1069-70 An 24 '15

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Lighting residence streets in Helena. C. W. Helmick. *Il Munic J* 37:917-18 D 24 '14

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Modern street lighting units. L. Bell. *Elec R & W Elec'n* 66:1038-9 Je 5 '15

Modern street lighting with mazda lamps. H. A. Tinson. *Il Gen Elec R* 18:659-65 JI '15

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Operation of mazda C street lamps. C. H. Shaw. *Elec R & W Elec'n* 67:297 Ag 14 '15

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Principles of scientific street lighting; abstracts. A. J. Sweet. *Elec R & W Elec'n* 66:999-1000 My 29 '15; *Elec W* 65:1485 Je 5 '15

Progress in street lighting; committee report. *Ilum Eng Soc* 10:537-48 no 7 '15; Excerpt. *Am Gas Light J* 103:276 N 1 '15

Safety precautions in view of the diminished public lighting. *Ilum Engr* 8:301-3 JI '15

Street illuminating arches. Portland, Ore. L. R. W. Allison. *Il Eng N* 73:638 Ap 1 '15

Street illumination tests; committee report. *Elec W* 65:1521-2 Je 12 '15

Street lamp inspection and maintenance in Shaboygan. C. H. Shaw. *Il Elec R & W Elec'n* 66:621-2 Ap 3 '15

Street lighting in Chicago. P. E. Haynes. *Ilum Eng Soc* 10:281-8 no 3 '15; Same cond. *Am Gas Light J* 102:316-17 My 17 '15

Street lighting in Seneca Falls, N. Y. *Il Munic J* 39:486 S 16 '15

Street lighting of London. W. B. Conant. *Il Munic Eng* 48:333-6 Je '15

Street lighting practice with incandescent lamps. G. H. Stickney. *Il Munic Eng* 48:80-8 F '15

Street-lighting requirements. W. E. Wicken-den. *Elec R & W Elec'n* 65:1146 D 12 '14

Street-lighting tables for 1915. *Elec W* 64:1185 D 12 '14

Street lighting with half-watt lamps; abstract. L. Bloch. *Elec W* 64:1259 D 26 '14

Street lighting with modern arc lamps. W. P. Hurley. *Ilum Eng Soc* 10:405-6 no 5 '15

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Apportionment of cost of highway bridges between street railways and cities; with discussion. C. M. Spofford. Il diag W Soc E J 20:405-43 My '15  
Brooklyn rapid transit. Ry Age 59:223-4 Ag 6 '15  
Interborough rapid transit company, New York; comparative statement of income, profit and loss for the years ended June 30, 1914 and 1915. Elec Ry J 46:806-7 S 18 '15  
Investment required per passenger. D. J. McGrath. Elec Ry J 45:881-3 My 8 '15  
Kansas City supplemental plan. Elec Ry J 46:1054-5 N 20 '15  
Washington railway & electric company's profit-sharing checks. C. P. King. Elec Ry J 45:157-8 Ja 16 '15

*See also* Street railroads—Taxation; Street railroads—Valuation

**Franchises**

Des Moines ordinance. Elec Ry J 46:461 S 11 '15  
Furthering the progress of the Toledo franchise. Elec Ry J 46:684-5 O 2 '15  
Toledo tentative draft completed. Elec Ry J 46:245-6 Ag 7 '15

**Inspection**

Car service inspection in Seattle. J. W. McCloy. Elec Ry J 46:272-3 Ag 14 '15  
Inspecting equipment in Greater New York. W. C. Whiston. Elec Ry J 45:133 Ja 16 '15

**Inspection of watches**

*See* Street railroads—Management

**Law**

*See* Street railroad law

**Lost articles**

Handling lost articles. Elec Ry J 45:23 Ja 2 '15

**Management**

Departmental work planning system at Portland, Ore. F. P. Maize. Il Elec Ry J 46:565-7 S 18 '15  
Detroit's urban transportation needs—present and future—set forth. Eng Rec 71:427-8 Ap 3 '15  
Dispatching city cars. E. Dana. Il Elec Ry J 45:802-3 Ap 24 '15  
Experience with the one-man electric car in a small city. R. M. Howard. Il Elec Ry J 45:233-4 Ja 30 '15  
Lancaster's experience with time-inspection system. R. B. Hull. Elec Ry J 45:1034-5 N 20 '15  
Pittsburgh railways claim department. Elec Ry J 46:139-45, 436-41 Jl 34, S 11 '15  
Public-be-pleased policy in practice. Elec Ry J 45:20-23 Ja 2 '15  
Report on Detroit traffic. Elec Ry J 45:664-5 Ap 3 '15  
Telephone dispatching at San Antonio. Il Elec Ry J 46:92-3 Jl 17 '15  
Telephone dispatching in city service. E. E. Strong. Il Elec Ry J 45:885-7 My 8 '15  
Telephone dispatching on street-railway lines. Il Elec R & W Elec'n 65:1150-1 D 12 '14

*See also* Street railroads—Complaint bureaus; Street railroads—Employees; Street railroads—Public relations; Street railroads—Records; Street railroads—Routes; Street railroads—Schedules; Street railroads—Stops

**Municipal ownership**

*See* Street railroads, Municipal

**Near-side stop**

*See* Street railroads—Stops

**Public relations**

Code of principles. T. S. Williams. Elec Ry J 45:220-2; Discussion. G. E. Tripp; M. C. Brush. 45:214-16 Ja 30 '15  
Public-be-pleased policy in practice. Elec Ry J 45:20-23 Ja 2 '15  
Publicity in Atlanta. Elec Ry J 45:111 Ja 9 '15  
Welfare work. J. W. Lillenthal. Gen Elec R 18:1092-7 D '15; Same cond. Elec Ry J 46:710-12 O 9 '15

*See also* Street railroads—Franchises; Street railroads—Regulation; Street railroads—Service; Street railroads, Municipal

**Records**

Car service inspection in Seattle. J. W. McCloy. Elec Ry J 46:272-3 Ag 14 '15  
Card index and what it means. J. J. Reynolds. Elec Ry J 46:815-18 O 16 '15  
Collection of traffic data. F. W. Doolittle. Elec Ry J 46:94-101 Jl 17 '15  
Departmental work planning system at Portland, Ore. F. P. Maize. Il Elec Ry J 46:565-7 S 18 '15  
Novel service record chart. Elec Ry J 45:366 F 20 '15  
Standardization of claims statistics. E. E. Slick. Elec Ry J 46:813-15 O 16 '15

**Referendums**

Public referendums. Elec Ry J 45:27-8 Ja 2 '15

**Regulation**

Argument on authority of Interstate commerce commission to require reports of accidents and other statistics from urban railways. J. T. Beasley. Elec Ry J 44:1389-90 D 26 '14  
Regulation of public utilities. L. A. Busby. Elec Ry J 46:1081-4 N 27 '15

**Street railroads—Regulation—Continued**

St. Louis service order; Missouri commission fixes service standards, defining rush-hour periods, transition periods and non-rush-hour periods. Elec Ry J 46:961 My 15 '15

See also Street railroad law; Street railroads—Franchises; Street railroads—Public relations; Street railroads, Municipal

**Routes**

Traffic congestion problem in Brooklyn, N. Y. W. H. Messenger. Il Munic Eng 48:19-25 Ja '15

**Safety devices and measures**

Brooklyn rapid transit safety work for employees. Elec Ry J 44:1291-2 D 13 '14

Brooklyn safety reports for employees. Elec Ry J 45:1196-7 Je 26 '15

Moving picture exchange for A. E. R. A.? F. J. Warnock. Elec Ry J 46:820-1 O 16 '15

Organized safety. L. R. Palmer. Elec Ry J 45:986 My 15 '15

Public school safety work in Brooklyn. Elec Ry J 46:691 O 2 '15

Relation of safety to conservation. B. F. Boynton. Elec Ry J 46:819-20 O 16 '15

Safety-first committee meets. Elec Ry J 46:103-5 Jl 17 '15

Safety first movement. Il Elec Ry J 46:34-46 Ja 2 '15

**Schedules**

Express cars in city service. Elec Ry J 44:1342 D 19 '14

From traffic study to time-table. F. W. Doolittle. Elec Ry J 46:587-9 S 18 '15

Operating cost and shifts in service. F. W. Doolittle. Elec Ry J 46:306-8 Ag 21 '15

Report of committee of A. E. R. A. on schedules and time-tables. Elec Ry J 46:757-9 O 9 '15

Schedule speed—a neglected factor. Elec Ry J 46:742-3 Ap 17 '15

Schedule speed in city service. Elec Ry J 46:29-30 Ja 2 '15

Time-table practice of the San Francisco-Oakland terminal railways. U. S. Slater. Elec Ry J 46:521-2 S 18 '15

Traffic analysis and schedule planning at Portland, Ore. F. Cooper. Elec Ry J 46:562-4 S 18 '15

See also Street railroads—Service; Street railroads—Stops

**Service**

Commission fixes service standards in Chicago. Elec Ry J 46:775 O 9 '15

Manila company submits service brief. Elec Ry J 46:872-3 O 2 '15

**Shelter stations**

Shelter-station for car passengers. K. C. Cardwell. Il Munic J 39:474 S 23 '15

Waiting stations and shelters. Elec Ry J 45:33 Ja 2 '15

**Shops**

See Electric railroads—Shops

**Stations**

See Street railroads—Shelter stations; Street railroads—Terminals

**Statistics**

Bay State street railway arbitration. Elec Ry J 46:708-10 Ap 10 '15

Census report on electric railways. Elec Ry J 45:180-2 Ja 16 '15

Charts exhibited in Rhode Island company wage arbitration hearings. Elec Ry J 46:664 O 2 '15

**Stops**

Express and skip-stop service in Denver. C. B. Wells. Elec Ry J 46:448 S 11 '15

Near-side stop. Elec Ry J 46:81-2 Ja 2 '15

Skip-stops in St. Louis. Elec Ry J 46:185-6 Jl 31 '15

Skip stops saves time. Elec Ry J 46:651 S 25 '15

**Taxation**

St. Louis mill tax decision: upholds the right to tax fares of the United railroads. Elec Ry J 46:70 Ja 2 '15

**Terminals**

Newark railway terminal and utilities building. Il plans Eng N 74:836-40 O 23 '15

Newark terminal to relieve traffic congestion. diag maps Eng N 74:680-2 O 7 '15

**Track**

All-babbitted center. R. P. Williams. diag Elec Ry J 44:1362-3 D 19 '14

Baltimore experience in paving street-railway tracks. H. D. Villar, Jr. Il diag Eng N 73:884-5 My 6 '15

Card records of Los Angeles track work. G. E. Campbell. Elec Ry J 46:407-8 S 4 '15

Columbus uses new joint and track foundation. H. O. Ackerman. Il diag Elec Ry J 46:956-7 N 6 '15

Concrete pavement in the track allowance. H. C. Campbell. Il Elec Ry J 46:998-1000 N 13 '15

Cost of concrete header along rails. H. R. Ferris. Eng & Contr 43:545 Je 16 '15

Deferred maintenance. C. H. Fuller. Elec Ry J 45:791-3 Ap 24 '15

Detail cost of track work with steel twin ties. A. J. Wolfe. diag Elec Ry J 46:916-17 O 20 '15

Discussion of depreciation. P. J. Kealy. Eng & Contr 44:118-23 Ag 18 '15

Flange-bearing special work. A. E. Harvey. Elec Ry J 46:84 Jl 10 '15

Flange-bearing track intersections for street railways. diag Eng N 73:158-9 Ja 23 '15

Girder and high T-rail renewals. A. Swartz; C. L. Hawkins. Elec Ry J 46:400-1 S 4 '15

Girder and high T-rail renewals. E. F. Legare. Elec Ry J 46:320 Ag 21 '15

Girder and high T-rail renewals. D. P. Falconer. Elec Ry J 46:328-31 O 16 '15

Girder and high T-rail renewals. E. M. Haas. diag Elec Ry J 46:179-84 Jl 31 '15

Girder and high T-rail renewals. G. L. Wilson; E. P. Roundey. Elec Ry J 46:592-3 S 18 '15

Girder and high T-rail renewals. W. F. Graves; R. C. Cram. Elec Ry J 46:872-3 O 23 '15

Grinding rail with carbundum track brake shoes. Il Elec Ry J 46:241 Ag 7 '15

Joint repairs on American city railways. S. Gausmann. Elec Ry J 45:803-4 Ap 24 '15

Laying new rails on old ties embedded in concrete. St. Louis, Mo. Il Eng N 74:840-1 O 23 '15

Laying street-railway track without ties. E. R. Horton, Jr. diag Eng N 74:594-9 S 23 '15

Life of way structure as affected by engineering and municipal conditions. P. N. Wilson. diag Elec Ry J 45:1212-13 Je 26 '15

Manganese steel special work. Elec Ry J 45:576-8 Mr 20 '15

Methods and costs of concreting for modern pavement. S. Gausmann. Elec Ry J 45:718-19 Ap 10 '15

Practical views of special work—the tongue switch. R. P. Williams. diag Elec Ry J 46:639-41 S 25 '15

Practice in paving street-railway tracks. Il diag Eng N 73:888 My 6 '15

Rail wear in Chicago. Elec Ry J 45:1195-6 Je 26 '15

Recommended street-railway track construction. Il Eng N 74:846 O 23 '15

Reconstruction of street-car tracks at Kansas City, Mo. E. B. Murray. Il Eng N 74:411-13 Ag 26 '15

Records of rail wear from vehicle traffic. Eng & Contr 44:42 Jl 14 '15

Relaying street-railway track at Cincinnati. Il Eng N 74:862 Ag 19 '15

Replaceable flange risers of tool steel in Seattle special work. J. Parkin. Il diag plan Elec Ry J 44:1394-5 D 26 '14

Report of the committee of A. E. R. A. on way matters. diag Elec Ry J 46:752-4 O 9 '15

**street railroads—Track—Continued**

- Ripping up street railway tracks. Eng N 73:1134-5 Je 10 '15
- Standard paved track construction of the Southern public utilities co. il Elec Ry J 46:324-5 Ag 21 '15
- Steel vs. wood ties in city track construction. J. A. Nester. il Elec Ry J 46:1089 N 27 '15
- Street-railway track in American cities. il Eng N 74:750-1 O 14 '15
- Track construction and flangeways in paved streets. Eng Rec 71:405 Mr 27 '15
- Track construction in paved streets. B. R. Brown. Elec Ry J 45:1028-8 My 29 '15
- Track on concrete stringers. H. B. Nichols. Elec Ry J 46:402-3 S 4 '15
- Track reconstruction in San Antonio. G. W. Smith. Elec Ry J 45:1030 My 29 '15
- Track renewal discloses perfect condition of 14-year-old granite pavement in Worcester, Mass. il Eng Rec 72:229-30 Ag 31 '15
- Track-trench excavating machine. il Elec Ry J 46:74 J1 10 '15
- Track work by contractor or way department? S. Gausmann. Elec Ry J 45:895-6 My 8 '15
- Way records on a cost-per-section basis. D. P. Falconer. Elec Ry J 46:1035-6 My 29 '15
- Yard entrance track layout possibilities. S. Striezhoff. diags Elec Ry J 46:876-7 O 28 '15
- See also* Electric railroads—Track; Street railroads—Crossings

**Traffic**

- Collection of traffic data. F. W. Doolittle. Elec Ry J 46:94-101 J1 17 '15
- From traffic study to time-table. F. W. Doolittle. Elec Ry J 46:587-9 S 18 '15
- Operating cost and shifts in service. F. W. Doolittle. Elec Ry J 46:308-8 Ag 21 '15
- Organizing the traffic survey. F. W. Doolittle. Elec Ry J 45:1100-2 Je 19 '15
- Periodical traffic counts. Elec Ry J 45:27 Ja 2 '15
- Plotting peak traffic as an aid to schedule adjustment. Elec Ry J 45:138 Ja 10 '15
- Recent practice in traffic counts. D. J. McGrath. Elec Ry J 44:1385-7 D 26 '14
- Relieving traffic congestion. il Elec Ry J 45:30-2 Ja 2 '15
- Traffic analysis and schedule planning at Portland, Ore. F. Cooper. Elec Ry J 46:562-4 S 18 '15
- Traffic characteristics. F. W. Doolittle. il Elec Ry J 45:926-9 My 15 '15
- Traffic characteristics and investment per revenue passenger. J. A. Emery. Elec Ry J 45:1110-20 Je 12 '15
- Traffic investigation in Denver. R. W. Toll. Elec Ry J 46:309-11 Ag 21 '15

**Trailer operation**

- Rochester train operation; operation of motor and trailer combinations has relieved traffic congestion in downtown section. diags Elec Ry J 45:752-3 Ap 17 '15

**Transfers**

- Printing 1,000,000 transfers a day; the Third avenue railway system prints its own transfers at a net cost of 9 cents per 1000. il Elec Ry J 45:702-4 Ap 10 '15
- Transfer issuing machine. il Elec Ry J 46:453-4 S 11 '15

**Valuation**

- Discussion of depreciation. P. J. Kealy. Eng & Contr 44:118-23 Ag 18 '15

**Yards**

- Yard entrance track layout possibilities. S. Striezhoff. diags Elec Ry J 46:876-7 O 28 '15

**Street railroads, Municipal**

- Boston versus Glasgow. Elec Ry J 46:443 S 11 '15
- Calgary's municipal street railway. W. E. Hardenburg. il Munic J 39:395-7 S 9 '15
- Detroit purchase negotiations. Elec Ry J 45:725 Ap 10 '15
- Municipal operation in England. A. N. Connert. Elec Ry J 45:179-80 Ja 23 '15
- Municipal ownership in Seattle. Elec Ry J 44:1311; 45:431 D 12 '14, F 27 '15
- Municipal street railways. A. J. Cleary. il plan map Eng N 73:320-4 F 8 '15

- Municipalization or a just regulation, a plea for the facts; abstract. J. W. Sullivan. Elec Ry J 44:1290 D 12 '14
- San Francisco municipal railways; annual report. Elec Ry J 45:1231 Je 26 '15

**Street signs**

- Concrete street signs and standards—letters in colored concrete. il diag Concrete Cem 7:45 J1 '15
- Municipally made street signs. H. M. White. il Munic J 39:659 O 28 '15
- Portland street corner directories. Munic J 39:7 J1 1 '15
- Street-name signs. il Eng N 73:757 Ap 22 '15
- Street signs placed in 1915. Munic Eng 48:270 Ap '15

**Street sprinkling**

- Electric street sprinklers. il Elec W 65:338 Ja 23 '15; Same. Eng Rec 71:117 Ja 23 '15
- See also* Street oiling

**Cost**

- Comparative cost of street sweeping and sprinkling with mules and with motors. Munic Eng 48:805 My '15
- Cost of boulevard lighting and street sprinkling and flushing in Grand Rapids, Michigan. Eng & Contr 42:485-6 N 18 '14
- Motor truck reduces sprinkling cost 70 per cent. Eng Rec 71:520 Ap 24 '15

**Street sweepers. See Street cleaning apparatus****Street traffic**

- Chicago takes a traffic census of the loop. Eng Rec 72:364 S 18 '15
- City street traffic investigation; Bridgeport, Conn. A. F. Muller. plan Eng N 73:111-12 Ja 21 '15
- Example of traffic census, Euclid avenue, Cleveland. M. B. Greenough. Eng & Contr 43:502-3 Je 2 '15
- Jitney bus, a new problem in traffic regulation. F. Reed. il Munic Eng 48:160-7 Mr '15
- Marking safety zones in Indianapolis. J. F. Hobart. il plan Munic Eng 49:99-100 S '15
- Means for traffic regulation in Detroit. plan Eng & Contr 44:203-4 S 15 '15
- Operation of safety zones in Kansas City, Mo. il Elec Ry J 46:308 Ag 21 '15
- Rotary traffic system in force in St. Louis. diag Automobile 32:249 F 4 '15
- Rules and regulations governing street traffic in Philadelphia. il diags Eng & Contr 42:821-4 S 30 '14
- Semaphore with automatic whistle to direct street traffic in San Francisco. il Elec Ry J 45:671 Ap 3 '15
- Street safety in Detroit. il plan Eng M 50:450 D '15
- Three years' growth of street traffic in Newark, N. J. H. Bartholomew. Eng N 74:538-9 S 16 '15
- Traffic census and its bearing on the selection of pavements. W. W. Crosby. Good Roads n s 10:265-6 N 6 '15
- Traffic congestion problem in Brooklyn, N. Y. W. H. Messenger. il Munic Eng 48:19-25 Ja '15
- Traffic control at electric railway crossings. il Munic Eng 48:178-80 Mr '15
- Traffic count on Chicago streets. Elec Ry J 46:632-3 S 25 '15
- Traffic investigation in Denver. R. W. Toll. Elec Ry J 46:309-11 Ag 21 '15
- Traffic regulation by zones marked on pavements. Munic Eng 48:221 Mr '15
- Why local regulations of motor truck traffic are objectionable. Horseless Age 35:407-9 Mr 24 '15

***See also* Vehicles****Streets**

- Boulevard system of San Francisco. J. M. Owens. map Eng N 74:498-9 S 9 '15
- Chicago plan and the new heavy-traffic streets. W. D. Moody. map Eng N 73:482-3 Mr 11 '15
- City of Oakland, California, and its street work. W. H. Jordan. il Good Roads n s 10:127-32 S 4 '15
- Cutting a city street through a railway station. Springfield, Mass. il diags plan Eng N 74:296-9 Ag 12 '15
- Heavy cut for a street at Kansas City. il diag Eng N 72:1158-60 D 10 '14



**Streets—Continued**

- New street line monuments at Pittsburgh. diag Eng & Contr 43:574 Je 30 '15  
 Organization, character of personnel, scope of work, and methods of operation and control of a large municipal highway department. W. H. Connell. *map J Fr Inst* 179: 439-59 Ap '15  
 Proposed design for stub-end streets. H. C. Campbell. *diag Eng & Contr* 44:350 N 3 '15  
 Protecting newly paved streets at Baltimore. Eng N 78:55 Ja 14 '15  
 Scheme to relieve congestion at busy street intersection. *il Eng N* 74:875 N 4 '15  
 Street contours at intersections and crosswalks. H. J. Fixmer. *plan Eng N* 78:767 Ap 22 '15  
 Street grade changed 19 ft. on Seattle line. *il Elec Ry J* 45:832 My 1 '15  
 Street grading in cities, 1915. *Munic Eng* 48: 257 Ap '15  
 \$3,000,000 needed for improving Boston's streets. *Eng Rec* 72:508-4 O 23 '15  
 Widening a business street at St. Paul, Minn. *diag Eng N* 72:1299 D 31 '14  
*See also* Alleys; City planning; Dust prevention; Pavements; Roads; Sidewalks; Snow removal; Street cleaning; Street lighting; Street openings; Street traffic; Subways (streets); also names of cities, subhead Streets

**Bibliography**

- Streets; their arrangement, lighting and planning. T. Kimball. *Special Libraries* 6:42-8 Mr '15

**Laws and regulations**

- Street work in New York. *Munic J* 39:3-4 Jl 1 '15

**Maintenance and repair**

- Street repair in Cleveland, Ohio; with cost tables. P. J. Masterson and others. *il Munic Eng* 49:174-8 N '15

**Obstructions**

- Piling building material in city streets. J. C. Trautwine, jr. *il Eng & Contr* 43:377 Ap 28 '15

**Width**

- Narrow vs. wide paved roadways in residential districts. *il Eng & Contr* 44:148 Ag 25 '15  
 Pavement widths and crowns. H. J. Fixmer. *diag Good Roads* n s 9:280-1 Je 5 '15; *Correction*. 10:16 Jl 3 '15  
 Wide streets and narrow walks and roadways in residential districts. N. P. Lewis. *Eng & Contr* 43:368 Ap 21 '15  
 Width and arrangement of residential streets in a small English town. A. J. Price. *Eng & Contr* 43:158 Ag 12 '14  
 Width of bridges and highways. C. M. Spoford. *Munic Eng* 49:114 S '15  
 Width of residence streets. *Munic J* 38:290 Mr 4 '15

**Stremmatograph**

- Instrument to determine the unit fiber strains in raffia. P. H. Dudley. *Gen Elec R* 17:1043-6 N '14; *Same*. *Sci Am S* 78:370-1 D 12 '14

**Strength of materials**

- Failure of structural brasses. P. D. Merica and R. W. Woodward. *Metal Ind* n s 13:459-61 N '15 (to be cont)  
 Notch shock tests and the law of similarity; abstract. R. Striebeck. *diag Am Soc M E J* 37:183-4 Mr '15  
 Strength of metals vs. composition. H. A. Lewis. *Metal Ind* n s 13:201-2 My '15  
 Stucco board vs. standard built walls. *il Bldg Age* 37:87-8 Ap '15  
 Tests on the diagonal strength of boiler plate. J. W. F. Macdonald. *Power* 41:779-80 Je 8 '15

- See also* Architecture; Building; Building materials; Cast iron—Testing; Elasticity; Girders; Strains and stresses; Trusses; Wood—Testing

**Strikes**

- Arizona copper miners' strike. *il Eng & Min J* 100:805-7 O 9 '15  
 Chicago's two-day strike. *Elec Ry J* 45:1165-8 Je 19 '15

- Detroit strike. *Elec Ry J* 45:998 My 22 '15  
 Fort Wayne strike. *Elec Ry J* 46:684, 1004 O 2, N 13 '15  
 Strike at Wilkes-Barre again. *Elec Ry J* 46: 882 O 23 '15  
 Strike in Wilkes-Barre, Pa. *Elec Ry J* 45:726 Ap 10 '15  
 Strike of freight handlers in Boston. *Ry Age* 59:865 N 5 '15  
 Strike situation in Arizona. *il Eng & Min J* 100:731-3 O 30 '15  
 Strikes and lockouts—causes and effects. *Am Ind* 15:39 Mr '15  
 Syracuse strike settled. *Elec Ry J* 45:767 Ap 17 '15

- See also* Arbitration, Industrial; Labor and laboring classes; Open and closed shop; Picketing

**Stripping. See Hydraulic excavation****Strontium**

- Strontium in the beet sugar industry. H. C. Meyer. *J Ind & Eng Chem* 6:1036 D '14  
 Two methods of separation of the metals of the alkaline-earth group. A. G. Paterson. *Am Chem Soc J* 37:2346-52 O '15

**Stucco**

- Probable life of Portland cement stucco on metal fabric. *Concrete Cem* 7:151-5 O '15  
 Stucco in suburban architecture—notes on Ogontz Hill, Philadelphia. O. C. Hering. *il Concrete Cem* 6:9-14 Ja '15  
 Thin stucco finish on garden walls and buildings near Middleburg, Va. *il Concrete Cem* 6:24-5 Ja '15

**Studebaker corporation, South Bend, Indiana**

- Unprecedented year for Studebaker corporation. *Horseless Age* 35:289-90 Mr 3 '15

**Student life. See College students****Study**

- Economy in study; psychological and physiological points on how to study to the best advantage. G. V. Dearborn. *Sci Am S* 80: 34-5 Jl 17 '15

**Stumps. See Clearing of land**

- Subaqueous excavation. *See* Excavation, Subaqueous

- Subdivision of ships. *See* Naval architecture—Subdivision

**Submarine boats**

- Austrian submarines. *il Sci Am* 113:250 S 18 '15  
 Baby submarine. *Sci Am* 113:316 O 9 '15  
 Boat design that eliminates bow waves and wake. C. Hering. *il Sci Am* 113:325 O 9 '15; *Discussion* (Waveless boat). 113:447 N 20 '15  
 Edison submarine boat storage battery. H. T. Wade. *il Sci Am* 113:450+ My 15 '15  
 First American submarine. C. Griswold. *Sci Am S* 79:333-4 My 22 '15  
 First electrically propelled submarine vessel. J. F. Waddington. *Int Marine Eng* 20:362 Ag '15  
 First German submarine. *Sci Am* 111:495 D 12 '14  
 First Spanish submarine. *Sci Am S* 80:229 O 9 '15  
 German submarines U 8 and U 12. *il Engineer* 119:250 Mr 12 '15  
 Improvements in submarines. C. N. Hinkamp. *Engineer* 119:230 Mr 19 '15  
 Is there any defense against the submarine? *Sci Am* 112:152 F 13 '15  
 Loading and firing submarine torpedoes. *Sci Am* 112:493 My 29 '15  
 Logical results of the submarine torpedo boat. *Eng N* 73:1234-6 Je 24 '15  
 Look-out for submarines. *Sci Am S* 80:311 N 13 '15  
 Machinery of modern submarines. A. P. Chalkley. *il Sci Am* 113:36+ Jl 3 '15  
 Modern submarine; features of the Holland, Laubeuf, Krupp and Laurenti types; abstracts. C. A. Ward. *diag Eng M* 49:96-9 Ap '15; *Int Marine Eng* 20:276 Je '15  
 Modern submarine in naval warfare. R. H. M. Robinson. *il J Fr Inst* 179:283-311 Mr '15; *Same*. *Sci Am S* 79:296-8, 312-14 My 8-15 '15  
 Modern submarine; methods of control. *il Sci Am* 113:16-17 Jl 3 '15

**Submarine boats—Continued**

- Modern submarine torpedo boats of the United States and other navies. H. S. Howard. *Il plan Eng N 73:1223-3 Je 24 '15*
- Modern submarines in war and peace. S. Lake. *Il diag plans Int Marine Eng 30:286-94, 349-55, 399-404, 450-6, 502-6, 559-62 Jl-D '15* (to be cont); Excerpt. *Eng M 50:104-7 O '15*
- Mother ship for submarines; a combined salvage and drydock vessel. R. G. Skerrett. *diag Sci Am 112:430 My 8 '15*
- Motive power for submerged operation of submarines. *Int Marine Eng 20:514 N '15*
- Periscope, the searching eye of the submarine. *Il Sci Am 112:96 Ja 30 '15*
- Raising the F-4. J. F. Springer. *Il Sci Am 112:355+ Ap 17 '15*
- Raising the submarine F-4. J. A. Furer. *Il plan Eng N 74:880-4 N 4 '15*
- Reference list of parts of submarine. *Il Sci Am 111:466-7 D 5 '14*
- Salvage of the submarine F-4. J. A. Furer. *Il Sci Am 113:336-7+ O 16 '15*
- Salvaging sunken submarines. *Il diag Sci Am S 79:232-3 Ap 10 '15*
- Submarine at sea. *Il Sci Am 112:310 Ap 3 '15*
- Submarine disaster at Honolulu. *Sci Am 112:336 Ap 10 '15*
- Submarine for hydrographic work. S. Lake. *Il diag Sci Am 113:273-3 S 25 '15*
- Submarine for the Austro-Hungarian navy. F. C. Coleman. *Il Sci Am 112:85 Ja 23 '15*
- Submarine periscopes. E. Coustet. *Il diag Sci Am S 80:269-70 O 23 '15*; Abstract. *Eng M 50:110-11 O '15*
- Submarine power plant. A. Hoar. *Il Sibley J 30:59-63 N '15*
- Submarine propulsion. P. H. Bergreen. *Sibley J 30:71-2 N '15*
- Submarine to save a submarine. R. G. Skerrett. *Il Sci Am 112:342 Ap 10 '15*
- Submarine torpedo-boat and its results. *Eng N 73:945-6 My 13 '15*
- Submarines and torpedoes. C. N. Hinkamp. *Il plan Sci Am S 80:136-8 Ag 28 '15*; Same cond. *Engineer 120:19 Jl 2 '15*; Same cond. *Eng N 74:898-9 O 7 '15*
- Submarines betrayed by sound waves. *Il Sci Am 113:333+ O 16 '15*
- Submarines that are strictly invisible. S. Lake. *Il Sci Am 112:68-9 Ja 16 '15*
- Submarines that crossed the ocean. *Sci Am S 80:293 N 6 '15*
- Trials of the submarine tender Fulton: first United States naval vessel to be fitted with Diesel engines. *Il diag plans Int Marine Eng 20:76-8 F '15*
- See also* Submarine warfare; Torpedo boats
- Submarine diving.** *See* Diving, Submarine
- Submarine mines.** *See* Mines, Submarine
- Submarine signals**
- Essenden oscillator to detect submarines. C. Moffett. *Elec R & W Elec'n 66:738 Ap 17 '15*
- Submarine signalling. *Engineer 119:446 My 7 '15*; Same. *Sci Am S 80:168-70 S 11 '15*
- Submarine signalling and proposed method of safe navigation in fog: abstract. F. L. Sawyer. *Int Marine Eng 20:21-2 Ja '15*
- Submarine warfare**
- Blockade by submarine. *Sci Am 112:376 Ap 24 '15*
- Modern submarine in naval warfare. R. H. M. Robinson. *Il J Fr Inst 179:283-311 Mr '15*; Same. *Sci Am S 79:296-8, 312-14 My 8-15 '15*
- Modern submarines in war and peace. S. Lake. *Il Int Marine Eng 20:503-6 N '15*
- Protection against torpedoes. *Engineer 119:41-2 Ja 8 '15*; Same. *Sci Am S 79:107 F 13 '15*
- Stitch in time saves nine: defense against submarines. *Sci Am 113:194 S 4 '15*
- Submarine as a commerce destroyer. *Il Sci Am 112:395 My 1 '15*
- Submarine catcher. *Il Sci Am 113:77 Jl 24 '15*
- Von Tirpitz and his navy. *Sci Am 113:384 O 16 '15*
- See also* Mines, Submarine; Submarine boats
- Sub-press.** *See* Punching machinery
- Subsidies**
- France to subsidize farm tractors. *Il Automobile 33:644-5 O 7 '15*
- Substations.** *See* Electric plants—Substations; Electric railroads—Substations
- Substitution (chemistry)**
- Substitution in the benzene nucleus. A. F. Holleman. *Am Chem Soc J 36:2495-8 D '14*
- Subsurface structures.** *See* Subways (conduits)
- Suburban houses**
- Suburban house of stucco finish. *Il diag plans Bldg Age 37:42-5 Ag '15*
- Subway cars.** *See* Cars, Subway
- Subway stations**
- Downtown union subway station, New York city. *Il Eng N 74:333 Ag 12 '15*
- Station entrances on Boston subways. W. B. Conant. *Il Munic Eng 49:13-14 Jl '15*
- Subway timbering**
- Comparative timbering costs in mine and subway. *diag Eng & Min J 100:689-90 O 23 '15*
- Mine-timbering methods and falls of ground. *Eng N 74:853 O 23 '15*
- Not merely mining but bridge building; the importance of diagonal bracing in subway timbering. *Il diag Sci Am 113:324 O 9 '15*
- Proper timbering would have prevented subway collapse. J. Seward. *Eng N 74:758-9 O 14 '15*
- Public-service engineers on New York subway accidents. *Eng N 74:762-3 O 14 '15*
- Recommendations for safety of subway timbering. *Eng N 74:716 O 7 '15*
- Respecting subway timbering. *Eng & Min J 100:610-11 O 9 '15*
- Special subway timbering on section 1, Lexington ave. route, New York. *diag Eng N 72:1218-19 D 17 '14*
- Steel support of decking gives large clear space for subway work. *Il diag Eng Rec 72:57-8 Jl 10 '15*
- Subway timbering accidents; two New York streets fall. *Il diag Eng N 74:662-6 S 30 '15*
- Timbering in New York subway. J. Seward. *Eng & Min J 100:890-1 N 27 '15*
- Timbering in New York subway. J. Seward; P. E. Barbour. *Eng & Min J 100:686-7 O 23 '15*
- Timbering in the New York subway. P. E. Barbour. *Il diag Eng & Min J 100:568-70 O 2 '15*
- Subways**
- Brooklyn bridge subway connection, New York city. *Il map Eng Rec 71:76-7 Ja 18 '15*
- Detail and fabrication of Harlem river tubes. T. Duckworth. *Il diag Eng Soc W Pa 31:538-60; Discussion. 31:560-83 O '15*
- Every type of subway construction but air tunnel used on Harlem river section. *Il plans Eng Rec 71:616-19 My 15 '15*
- Extension of the Bakerloo tube. *Il plans map Engineer 119:29-31, 56-8, 92-4 Ja 8-22 '15*
- Harlem river four-track subway tunnel. O. Hoff. *Il diag map Eng Soc W Pa 31:517-37; Discussion. 31:571-83 O '15*
- Heavy needling for 450-ton column loads for subway underpinning. *Il diag Eng Rec 71:565-6 My 1 '15*
- Lap-bolted crossbracing in wide and deep cut. *Il diag Eng N 74:602 S 23 '15*
- Methods used to protect the foundation of a heavy tower during adjacent subway construction in Boston. *diag Boston Soc C E J 1:408-14 S '14*; Same. *Eng & Contr 42:604-5 D 30 '14*
- New York rapid transit railway extensions. F. Lavis. *diag Eng N 72:732-7, 858-63, 950-2, 972-8, 1068-71, 1104-9, 1150-5, 1206-10, 1294-8 O 15, 29-N 12, 26-D 17, 81 '14*
- New York subway tapped for new connections while carrying heavy traffic. *Il diag plan Eng Rec 72:256-7 Ag 28 '15*
- New York transit contracts. *Eng Rec 70:662 D 19 '14*
- Progress on the dual subway system, New York city. *Ry R 56:118-19 Ja 23 '15*
- Railroads under and over the streets of New York. *Il diag map Sci Am 113:46-7+, 64-5+, 96-7+ Jl 10-17, 31 '15*
- Short subway section in New York involves many difficulties of design. J. Glaser. *Il diag Eng Rec 71:448-51 Ap 10 '15*
- Signals for new Brooklyn subways. *Ry Age 67:1191 D 25 '14*

**Subways—Continued**

- Slice method of subway construction, Boylston street subway, Boston, Mass. 11 diags Ry R 56:621-4 My 8 '15
- Soil tests reported and safe underpinning methods in sand described. J. F. Greadhead, diags Eng Rec 72:831-3 N 20 '15
- Starting six tubes for two new East river subway crossings in New York. 11 diags Eng Rec 71:810-12 Je 26 '15
- Steel shields protect traffic during removal of New York subway roof. 11 Eng Rec 72:110-12 Jl 24 '15
- Subway undercrossing walls concreted from the top down. 11 diags Eng Rec 72:25-6 Jl 3 '15
- Tearing out a reinforced-concrete subway, New York city. 11 Eng N 72:1126-7 D 8 '14
- Unexcavated core is left in center in sinking circular subway shaft. 11 diags Eng Rec 71:522-3 Ap 24 '15
- See also Subway stations; Subway timbering; Tunnels and tunneling

**Accidents**

- Collapse of street decking follows subway blast. 11 Eng Rec 72:397, 400 S 25 '15
- Collapse of streets in New York city during subway construction. 11 Ry R 57:484 O 2 '15
- Collapse of the subway work on Seventh avenue, New York city. 11 Sci Am 113:295 O 2 '15
- Danger of collapse in subways is not general. F. Lavis. Eng N 74:666-7 S 30 '15
- Disastrous burnout in a subway manhole, New York city. Sci Am 113:66 Ja 16 '15
- Dynamite explosion causes new subway cave-in in New York. 11 Elec Ry J 46:881-2 S 25 '15
- Not merely mining but bridge building; the importance of diagonal bracing in subway timbering. 11 diags Sci Am 113:324 O 9 '15
- Public-service engineers on New York subway accidents. Eng N 74:762-3 O 14 '15
- Rock slide causes second collapse of subway decking, in New York city. Eng Rec 72:429-4 O 2 '15
- Rock slides greatest menace to New York subway work; report of E. S. Davis and H. H. Quimby. Eng Rec 72:461-4 O 9 '15
- Safety in subway construction. Eng N 74:657-8 S 30 '15
- Safety in subway construction. Eng Rec 72:405 O 2 '15
- Severe cable burnout in the subway, New York city. Eng N 73:93 Ja 14 '15
- Subway fire inquiry and orders. Elec Ry J 45:148-9 Ja 16 '15
- Subway timbering accidents; two New York streets fall. 11 diags Eng N 74:662-6 S 30 '15
- Timbering in the New York subway. F. H. Barbour. 11 diags Eng & Min J 100:568-70 O 2 '15
- Unjust criticism of the subway system of New York. Sci Am 112:62 Ja 16 '15

**Safety devices and measures**

- Increasing safety of rapid transit in New York city. Eng N 73:236 F 4 '15
- Safety conditions in Boston subways. Elec Ry J 46:159-60 Jl 24 '15
- Safety precautions in New York subway; report made to the mayor by the city fire department; abstracts. Elec Ry J 46:601 S 18 '15; Eng N 74:572 S 16 '15

**Ventilation**

- Extension of the Bakerloo tube. 11 plans Engineer 119:92-3 Ja 22 '15
- Proposed subway ventilators. Metal Work 83:270-1 F 12 '15
- Subway ventilation. J. G. Dudley. plan Heat & Ven 12:42-3 O '15
- Subway ventilation schemes. 11 diags Heat & Ven 12:13-16 Ag '15

**Subways (conduits)**

- Chicago builds its first utility gallery. plan Eng Rec 72:593-4 N 13 '15
- Comparative merits of four types of location of underground utility lines. L. A. Dumond. Eng & Contr 44:367-9 N 3 '15
- Design and construction features of Chicago's first utilities gallery. 11 diags Eng & Contr 44:376-7 N 10 '15

How shall provision be made for subsurface structures? Eng Rec 70:683 D 26 '14

Pipe subways for the public utilities of Chicago. L. A. Dumond. Eng Rec 70:705-6 D 26 '14

Subways for public-utility pipes and wires in Chicago streets. Eng N 73:60-1 Ja 14 '15; Same. Am Gas Light J 102:76 F 1 '15

Underground utility galleries for downtown Chicago. J. W. Alvord and C. B. Burdick. Eng Rec 71:53-4 Ja 9 '15

**Subways (streets)**

- Cutting a city street through a railway station, Springfield, Mass. 11 diags plan Eng N 74:296-8 Ag 13 '15
- Difficult grade crossing elimination in Albany, N. Y. 11 diags plan Ry Age 59:961-3 N 19 '15
- Factors in grade separation. Eng N 73:422-3 Mr 4 '15
- Methods and costs of constructing Bay street underpass at Macon, Ga. C. H. Fuller. 11 diags Concrete Cem 6:76-8 F '15

**Success**

- How to fail. F. D. Van Amburgh. Metal Work 83:500-1+ Ap 2 '15; Same. Dom Eng 71:187-9 My 15 '15
- Measure of success—responsibility. Sibley J 29:166-9 F '15

**See also Leadership****Sucrose**

Direct and the invert polarization of pure sucrose. H. S. Walker. J Ind & Eng Chem 7:218 Mr '15

Suction between passing ships. S. A. Reeve. diags Sci Am S 79:30-2, 46-8, 62-4 Ja 9-23 '15

**Sudan, Egyptian**

Development of the Sudan. 11 map plans diags Engineer 119:271-4 Mr 19 '15

**Sugar**

- Combustion calorimetry and the heats of combustion of cane sugar, benzoic acid, and naphthalene. H. C. Dickinson. biblig U S Bur Stand Bul 11:189-257 Mr 1 '15
- Contributions of the chemist to the sugar industry. W. D. Horne. J Ind & Eng Chem 7:278-9 Ap '15
- Efficiency of various methods for the filtration of sugar solutions. A. E. Roberts. diags J Ind & Eng Chem 6:986-9 D '14
- Transforming sugar into proteins and fats. H. W. Hillyer. Sci Am 113:446-4 N 20 '15
- See also Beets and beet sugar; Glucose; Syrups

**Manufacture**

Engineer of modern sugar plantation has to deal with varied problem; plant of Niquero company in Cuba. S. Vickers. 11 plan map Eng Rec 72:634-6 O 30 '15

Performance tests of sugar-house heating and evaporating apparatus. E. W. Kerr, J. F. Gunther and W. A. Tolsten. diags Met & Chem Eng 13:485-92, 506-7 Ag '15

Sugar industry. C. A. Kelsey. Am Inst El El Pro 34:3039-44 D '15

Sugar beet. See Beets and beet sugar

Sugar maple. See Maple

**Sugars**

- Hydrolysis of sugar solutions under pressure. W. S. Hubbard and W. L. Mitchell. J Ind & Eng Chem 7:609-10 Jl '15
- Volumetric Fehling method using a new indicator. A. M. Breckler. J Ind & Eng Chem 7:37-8 Ja '15

**See also Maltose**

Sulfur. See Sulphur

**Sulphates**

- Determination of sulfates in soils. P. H. Brown and E. H. Kellogg. J Ind & Eng Chem 7:686-7 Ag '15
- Formation and decomposition of sulphates during roasting. B. Dudley, jr. Met & Chem Eng 13:221-6, 303-8 Ap-May '15

**Sulphides**

- Action of thionyl chloride on sulfides. H. B. North and C. B. Conover. Am Chem Soc J 37:2486-90 N '15
- Cyanidation of low-grade sulphide ores in Colorado. H. C. Parmelee. 11 plan Met & Chem Eng 13:421-5, 477-9 Jl-Ag '15

**Sulphides—Continued**

- How sulphides may exist in steel ingots. J. O. Arnold and G. R. Bolsover. *Iron Tr R* 57: 787-8 O 14 '15; Discussion. G. F. Comstock. *Iron Tr R* 57:894+ N 4 '15
- Origin and occurrence of certain crystallographic intergrowths. J. Segall. 2 pls *Econ Geol* 10:462-70 J1 '15
- Oxidation of sulphides with potassium iodate. R. S. Dean. *Am Chem Soc J* 37:1134-7 My '15
- Processes of mineralization and enrichment in the Tintic mining district. W. Lindgren. 2 pls *Econ Geol* 10:226-40 Ap '15
- Rate of reduction of acidity of descending waters by certain ore and gangue minerals and its bearing upon secondary sulphide enrichment. G. S. Nishihara. 11 *Econ Geol* 9:743-57 D '14
- Sulphide-bearing rocks from Litchfield, Conn. E. Howe. *diags Econ Geol* 10:330-47 Je '15
- Treatment of arsenical-antimonial sulphide ore; abstract. K. B. Moore and H. R. Edmands. *Met & Chem Eng* 13:508-9 Ag '15

See also Chalcocite

Sulphite-solution plant. See Paper making and trade

**Sulphonates**

- Study of the reaction of alkali salts of sulfonic acids with alkali phenolates by dry distillation. E. H. Nollau and L. C. Daniels. *Am Chem Soc J* 36:1885-91 S '14

**Sulphonation**

- Addition compounds of organic substances with sulfuric acid. J. Kendall and C. D. Carpenter. *Am Chem Soc J* 36:2498-517 D '14

**Sulphur**

- Blow holes and sulphur. R. A. Pitman. *Foundry* 43:95-6 Mr '15
- Comparative study of methods for the quantitative determination of sulfur in peptone. H. W. Redfield and C. Huckle. *Am Chem Soc J* 37:607-11 Mr '15
- Controlling the sulphur in melting pig iron. W. M. Carr. *Foundry* 43:189-90 My '15
- Equilibrium between carbon oxysulfide, carbon monoxide and sulfur. G. N. Lewis and W. N. Lacey. *diag Am Chem Soc J* 37:1976-83 S '15
- Estimation of selenium in sulfur. W. Smith. *J Ind & Eng Chem* 7:849-50 O '15
- Free energy of the various forms of elementary sulfur. G. N. Lewis and M. Randall. *Am Chem Soc J* 36:2468-75 D '14
- Molecular weight of sodium sulfate and the atomic weight of sulfur. T. W. Richards and C. R. Hoover. *Am Chem Soc J* 37:108-13 Ja '15
- Origin of the sulphur deposits of Sicily. W. F. Hunt. 11 *Econ Geol* 10:543-79 S '15
- Production of elemental sulphur. C. H. Fulton. *U S Bur Mines Bul* 84:70-7 '15
- Quantitative determinations of sulfur in the culture medium for the detection of the bacteria producing hydrogen sulfide. H. W. Redfield and C. Huckle. *Am Chem Soc J* 37: 612-23 Mr '15
- Recent methods for the determination of total sulphur in rubber. J. B. Tuttle and A. Isaacs. *U S Bur Stand Tech Pa* 45:1-16 '15; Same. *J Ind & Eng Chem* 7:658-63 Ag '15
- Recovery of elemental sulphur. *Eng & Min J* 100:229 Ag 7 '15
- Results of some co-operative work on determination of sulfur in pyrites. H. C. Moore. *J Ind & Eng Chem* 7:634-6 J1 '15
- Sicilian sulphur industry. *Eng & Min J* 100: 466-7 S 18 '15
- Sulphur as a conductor. C. A. Butman. *Elec W* 64:1256 D 26 '14
- Sulphur in coal. *Elec W* 65:350-1 F 6 '15
- Sulphur in malleable cast iron. R. H. Smith. *Iron Age* 96:1285 N 25 '15
- Sulphur dioxide**
- Effect of sulphur dioxide on human beings. *Eng & Min J* 100:885-6 N 27 '15
- Exact determination of sulphur dioxide in air. J. R. Marston. *Eng & Min J* 100:726-7 O 30 '15
- Methods for removal of sulphur dioxide from smelter smoke. C. H. Fulton. 11 *U S Bur Mines Bul* 84:65-7, 77-82 '15

- Range of applicability of the liquid sulphur dioxide method for determining aromatic constituents in hydrocarbon mixtures. W. F. Rittman and R. J. Moore. *diag Met & Chem Eng* 13:713-14 O 15 '15
- Report of the Selby smelter commission. *J Ind & Eng Chem* 7:41-5 Ja '15; Same cond. *Eng & Min J* 98:1076-8 D 19 '14

**Sulphur Springs, Arkansas**

- Spring deposits at Sulphur Springs, Ark. C. E. Siebenthal. *Econ Geol* 9:756-57 D '14

**Sulphuric acid**

- Absorption of gasoline vapor in natural gas by fuming sulfuric acid. R. P. Anderson and C. J. Kneider. *J Ind & Eng Chem* 8:989-92 D '14
- Addition compounds of organic substances with sulfuric acid. J. Kendall and C. D. Carpenter. *Am Chem Soc J* 36:2498-517 D '14
- Apparatus for the concentration of sulphuric acid. W. Mason. *diags Met & Chem Eng* 13:17-18 Ja '15
- Comparison of the relative drying powers of sulfuric acid, calcium chloride and aluminum trichloride when used in ordinary Scheibler desiccating jars. J. W. Marden and V. Elliott. *J Ind & Eng Chem* 7:320-1 Ap '15
- Fused silica dishes for the concentration of sulphuric acid. A. E. Marshall. *diag Met & Chem Eng* 13:186-7 Mr '15
- Manufacture of sulphuric acid from smelter smoke. C. H. Fulton. 11 plan *U S Bur Mines Bul* 84:67-70 '15
- Sulphuric acid manufacture in Great Britain. *Eng & Min J* 99:438 Mr 6 '15

**Sun**

- Causes of solar heat. A. Veronnet. *Sci Am S* 79:91 F 6 '15
- Flammarion talks on the sun. *Sci Am* 112:146-8 F 6 '15
- Sun drawing water. *Sci Am* 112:86 Ja 16 '15
- See also Electricity, Solar; Solar power plants; Solar radiation

Sun dials. See Sundials

Sun power plants. See Solar power plants

**Sundials**

- Universal sun-dial. 11 *Sci Am* 112:246 Mr 13 '15

**Sunflowers**

- Lightest known vegetable substance. *Sci Am* 113:450 N 20 '15

**Superheated ammonia**

- Effect of superheated ammonia on compressor capacity. H. R. Howell. *Power* 42:646-7 N 9 '15

**Superheated steam**

- Specific heat of superheated steam at pressures from 8 to 20 atmospheres, and from temperature of saturation to 380 deg. cent.; abstract. O. Knoblauch and A. Winkhaus. *Am Soc M E J* 37:409-10 J1 '15
- Specifications for alloys for high-speed superheated steam turbine blading. W. B. Parker. 11 *Engineer* 120:441-3 N 5 '15
- Superheat for Corliss engines. E. R. Pearce. *Power* 40:886 D 22 '14
- Superheat in vertical fire-tube boilers. S. P. Stewart. *Power* 42:582-6 O 26 '15
- Superheated steam in torpedo-boat engines. W. H. Miller. *Sci Am* 112:33+ J1 3 '15
- Superheated steam unit; some remarkably economical German engines. W. H. Miller. 11 *Sci Am* 112:290-1+ Mr 27 '15
- Use of superheated steam. L. P. St. Cyr. *Power* 42:87-8 J1 20 '15
- What causes the high efficiency of locomotives? E. R. Pearce. *Power* 41:633 My 11 '15; Same (Superheated steam engines) *Sci Am S* 80: 304 N 6 '15

**Superheaters**

- Lovekin marine boiler and internal superheater. A. B. Willits. *diags Power* 42:293-5 Ag 31 '15
- Robinson marine superheater. 11 *diags Engineer* 119:286-7 Mr 19 '15

See also Locomotives—Superheaters

Supersaturated solutions. See Solutions, Supersaturated

Surface combustion. See Combustion, Surface

Surface tension. See Capillarity

**Surge tanks**

- Concrete surge tank, disconnected at base, operates on differential principle. *Il diag Eng Rec* 71:368-70 Mr 20 '15  
 Results with a novel surge tank. *diag Eng N* 73:687 Ap 8 '15  
 Tall-tunnel regulation suggests new opportunities in hydroelectric field. R. D. Johnson. *Eng Rec* 71:380 Mr 20 '15  
 Tests check computed values of surges; investigations at Tallulah Falls hydroelectric plant in Georgia indicate accuracy of formulae commonly used. E. Lauchli. *diag Eng Rec* 71:378-9 Mr 20 '15

**Surgery**

- New method of disinfecting wounds. *Sci Am S* 80:111 Ag 14 '15  
 Prehistoric man and his early efforts to combat disease. T. W. Parry. *Il Sci Am S* 78:365-6 D 5 '14  
*See also* Anesthetics; Bandages and bandaging; First aid in illness and injury; Fractures; Surgery, Military; Surgical instruments; Wounds

**Surgery, Military**

- Mechanics of convalescence; methods of hastening the cure of German wounded soldiers. W. Bannard. *Il Sci Am* 112:404 My 1 '15  
 Military surgery. *Sci Am* 113:178 Ag 28 '15  
 Military surgery: lessons taught by the present war. *Sci Am S* 79:54 Ja 23 '15  
 Roentgenology in war. *Il Sci Am S* 79:68 Ja 30 '15  
 X-Ray work in war. *Il Sci Am S* 79:120-1 F 20 '15

**Surgery, Primitive**

- Progress of surgery as shown by military medical service in ancient times. N. Lallié. *Il Sci Am S* 80:356-7 D 4 '15

**Surgical instruments**

- Electro-magnet for removing particles of iron from the flesh. *Il Mach* 21:601 Mr '15; *Elec R & W Elec N* 60:508 Mr 13 '15; *Iron Age* 95:452 F 26 '15; *Iron Tr R* 56:525 Mr 11 '15; *Sci Am S* 79:168 Mr 13 '15  
 Use of the Hughes induction balance for locating bullets. *diag Elec W* 65:167 Ja 16 '15

**Survey markers**

- Practice in city survey monuments and benchmarks. *Eng N* 73:269-70 F 11 '15

**Surveying**

- Aids to traverse computations. H. Andrews. *Eng N* 74:940-1 N 11 '15  
 Coiling a long tape by figure-eight method. H. N. Bradstreet. *Eng N* 73:939 My 13 '15  
 Computation of survey traverses. H. Andrews. *Eng N* 74:268-9 Ag 5 '15  
 Do surveyors use traverse tables? *Eng N* 73:1038-9 My 27 '15  
 Examples of stadia surveying and its broader uses with special reference to preliminary hydraulic surveys. W. B. Saunders. *Eng & Contr* 43:570-2 Je 30 '15  
 History of steel tapes. *Eng N* 72:1316-17 D 31 '14  
 Land classification surveys of irrigable tracts. K. A. Heron. *Eng N* 73:1039 My 27 '15  
 Method and cost of making a drainage survey for the Washington Bayou drainage district, Mississippi. O. W. Mallin. *map Eng & Contr* 44:92-5 Ag 4 '15  
 More about traverse tables and survey computations. E. E. Thum. *Eng N* 74:124-5 Ji 15 '15  
 New street line monuments at Pittsburgh, Pa. *diag Eng & Contr* 43:574 Je 30 '15  
 Notes on errors in survey work. A. W. Bedell. *Eng N* 72:1171 D 10 '14; *Same. Eng & Min J* 99:14-15 Ja 2 '15  
 Practice in city survey monuments and benchmarks. *Eng N* 73:269-70 F 11 '15  
 Record leveling on geodetic survey. W. Bowie. *Eng Rec* 71:307 Je 26 '15  
 Simple method of cross-sectioning employed on ditch work. B. L. Parker. *Eng & Contr* 43:443 My 19 '15  
 Solar declinations computed by graphic method. R. R. V. Reynolds. *Eng Rec* 72:160 Ag 7 '15

Supplementing the Canadian public land surveys by rapid stadia work. J. A. Macdonald. *Eng N* 73:399-400 F 25 '15

*See also* Civil engineering; Mine surveying; Railroad engineering; Railroad surveying; Steel tape; Surveying instruments; Topographical drawing

Surveying, Hydrographic. *See* Hydrographic surveying

Surveying, Magnetic. *See* Magnetic surveying

Surveying, Mine. *See* Mine surveying

Surveying, Topographical. *See* Topographical surveying

**Surveying instruments**

- Account of micrometers for measuring distances. J. Watt. *Eng N* 73:471 Mr 11 '15  
 New features in surveying instruments. *Il Eng N* 74:198-200 Ji 29 '15  
 New Smith solar attachment. A. D. Kidder. *Il Eng N* 73:1068-70 Je 3 '15  
 Quick solar reduction by slide rule. *Il Eng N* 74:267 Ag 5 '15; *Same. Eng & Min J* 100:353 Ag 28 '15  
 Testing surveyors' tapes by the Canadian government. J. A. Macdonald. *Il Eng N* 74:414-15 Ag 26 '15  
*See also* Compass; Stadiagraph; Transit, Surveyors

**Surveyors**

Licensing land surveyors in the Canadian provinces. J. A. Macdonald. *Eng N* 73:1168 Je 17 '15

**Suspended railways**

Aerial monorail; Mühl system for high speed suspended electrical trains. *Il Sci Am* 112:292 Mr 27 '15

*See also* Cableways; Telpherage

**Suspension bridges. *See* Bridges, Suspension****Swasey, Ambrose, 1846-**

- Donor of the initial gift to the Engineering foundation. *Am Soc M E J* 37:vii-viii F '15  
 Engineering foundation established. *por Iron Age* 95:289-90 F 4 '15  
 Engineering foundation started with \$200,000 gift. *por Eng Rec* 71:153-4 Ja 30 '15  
 Foundation rests on broad ideas. *por Iron Tr R* 56:289-90 F 4 '15

**Swedish wrought iron. *See* Wrought iron****Sweeping machines**

Small sweeping machines for power and hand operation. *Il Eng N* 74:727 O 14 '15

**Sweet, John Edison, 1832-**

John Fritz medal award. *por Am Soc M E J* 37:36-8 Ja '15

**Swimming pools**

- Concrete natatorium for Chicago school children. *plan Dom Eng* 72:229 Ag 21 '15  
 Construction, mechanical installation, water supply, heating the water, various types of installations. A. G. King. *diag Dom Eng* 69:63-5, 126-8, 189-91, 264-6, 318-20; 70:34-5, 101-2 O 17, 31, N 14, 28, D 12 '14, Ja 9, 23 '15  
 Construction of concrete swimming pool at Rockledge, Florida. *Il diag Concrete Cem* 6:148-9 Mr '15  
 Design features of reinforced concrete swimming pool at Riverview park, Chicago. *plan Eng & Contr* 44:357 N 3 '15  
 Details of an open-air swimming pool. *Il diag Bldg Age* 37:51-2 My '15  
 Disinfection of swimming pools with copper sulphate. *Sci Am S* 80:352 N 27 '15  
 Municipal swimming pool, Grand Rapids, Wis. *Eng N* 74:821 O 28 '15  
 Natatorium in the Evander Childs' high school, New York city. E. R. Porter. *plans Dom Eng* 73:134-7 O 30 '15  
 Plumbing equipment of swimming pool, Louisville, Ky. *Il plan Metal Work* 83:288-90 F 19 '15; *Same. Bldg Age* 37:39-40 Ji '15  
 Plumbing work in Harvard club of New York. *Il plan Metal Work* 84:605-7 N 12 '15  
 St. Louis builds large swimming pool. *diag Metal Work* 83:727 My 21 '15  
 Salt water swimming pool at Salem, Mass. *Il Munic J* 39:224 Ag 12 '15  
 South side bath house, Pittsburgh, Pa.; views and plans. *Brickb* 24:pl 101-2 Ji '15

**Swimming pools—Continued**

- Swimming pool building for Helen Miller Gould, Irvington, N. Y.; views and plans. Arch Rec 38:171-6 J1 '15  
 Swimming pool of Pittsburgh athletic club. 11 Metal Work 84:522-3 O 22 '15  
 Use of copper sulfate in the purification of swimming pools. S. J. Thomas. J Ind & Eng Chem 7:496-9 Je '15  
 Wealthy Californian's swimming pool de luxe. 11 plan Metal Work 83:796-8 Je 4 '15

**Swine****Transportation**

- Cooling hogs in transit. diags Ry Age 58:752 Ap 2 '15

**Swing bridge. See Drawbridges****Swiss commercial and industrial association**

- Commercial organizations in Switzerland. A. J. Wolfe. U S Bur For & Dom Com 101:13-17 '15

**Switchboards**

- Alternating-current switchboard costs. J. Willmore. diags Elec W 66:414 Ag 21 '15  
 Barrier cutout panels and cabinets. 11 Elec R & W Elec'n 67:772 O 23 '15  
 Concrete switchboard. J. R. Chapman. 11 Power 42:311 Ag 31 '15; Same. Eng & Min J 100:476-7 S 18 '15  
 Cutler-Hammer charging panels. 11 Elec R & W Elec'n 67:732-4 O 16 '15  
 Furnishing electric service in Louisville for \$2.99. 11 Elec R & W Elec'n 67:319-20 Ag 21 '15  
 Incident that shows the importance of correct synchronizing connections. E. C. Parham. Elec W 66:766 O 2 '15  
 Indicating thermometers part of switchboard equipment. 11 Elec W 65:421 F 13 '15  
 Method of anchoring and tightening switchboard instrument buses. C. H. Sanderson. diags Elec W 66:753 O 3 '15  
 New toll switchboard for Tampa. 11 Elec R & W Elec'n 65:1230 D 26 '14  
 Panel box for industrial plants. C. J. Whitfield. diags Elec W 66:73-4 J1 10 '15  
 Power plant of new Lumber exchange building, Chicago. T. Wilson. 11 Power 41:769-70 Je 8 '15

- Recent developments in switchboard apparatus. E. H. Beckert. 11 diags Gen Elec R 18:646-57 J1 '15

- Supplying of power to the Quaker oats company. J. M. Drabelle. 11 diag Gen Elec R 18:42-4 Ja '15

- Switchboard fittings. 11 Elec Ry J 46:835-6 O 16 '15

**Switches, Railroad. See Railroads—Switches, frogs, etc.****Switzerland**

See also Electric railroads—Switzerland

**Commerce**

- Commercial organizations in Switzerland and the Swiss department of commerce. A. J. Wolfe. U S Bur For & Dom Com 101:1-28 '15

**Commerce, Department of**

- Commercial organizations in Switzerland and the Swiss department of commerce. A. J. Wolfe. U S Bur For & Dom Com 101:30-6 '15

**Symbols, Electric. See Electric symbols****Symbols, Foundry. See Foundry symbols****Symbols, Mnemonic**

- Efficiency in the stores department. W. G. Astle. Elec Ry J 46:907 O 30 '15; Same cond. (Storeroom organization and management). Iron Age 96:468-60 Ag 26 '15; Same cond. Metal Work 84:333-4 S 10 '15

- Operating a foundry on a scientific basis. F. A. Parkhurst. Foundry 42:479-86 D '14

- Pattern storage systems for factories. J. G. Shirley. Iron Age 96:304-5 Ag 5 '15

**Synchronous converters. See Rotary converters****Synchrosopes**

- Electrostatic potential and synchronism indicators. 11 Elec Ry J 46:326 Ag 21 '15; Elec R & W Elec'n 67:251-2 Ag 7 '15; Elec W 66:310-11 Ar 7 '15; Power 42:271-2 Ag 24 '15

- Large synchrosopes facilitate station operation at Springfield, Mass. 11 Elec W 65:1251 My 15 '15

**Synthetic stone. See Concrete stone****Synthetic stones. See Precious stones, Synthetic****Syria. See Railroads—Syria****Syrups**

- Hydrolysis of sugar solutions under pressure. W. S. Hubbard and W. L. Mitchel. J Ind & Eng Chem 7:609-10 J1 '15

- Tamarind syrup. W. C. Taber. J Ind & Eng Chem 7:607-9 J1 '15

See also Apple syrup

**T****Tabulating machines. See Calculating machines****Tachograph**

- Records of speed variation. F. B. Steele. 11 Elec W 65:1687-8 Je 26 '15

**Tachometers**

- Electric tachometer. 11 Eng M 48:sup4-5 F '15  
 Esterline electric speed indicator. 11 Elec R & W Elec'n 66:829-30 My 1 '15; Elec Ry J 45:897 My 8 '15  
 Portable triple-scale electric tachometer. 11 Elec W 66:487-8 Ag 23 '15

**Tahiti**

- Historical sketch, resources and social life. E. T. Allen. 11 Am For 20:870-80 D '14

**Tailings**

- Chart for determining tailings value. W. J. McCauley. Eng & Min J 99:575 Mr 27 '15  
 Elevating placer tailings with a Hayward bucket. H. I. Ellis. Eng & Min J 100:309-10 Ag 21 '15

- Mears-Wildley tailings mill. W. C. Prosser. 11 Eng & Min J 99:607-8 Ap 3 '15

- Multiple-arch dam to retain quartz mill tailings. 11 Eng N 73:818-19 Ap 29 '15

- Recovery of mercury from amalgamation tailings. Buffalo mines, Cobalt. E. B. Thornhill. flow sheet Am Inst Min E Bul 104:1663-7 Ag '15; Abstracts. Met & Chem Eng 13:873, 896 N 15-D 1 '15; Discussion. Am Inst Min E Bul 108:2455 D 15

- Roasting and leaching concentrator slimes tailings. L. Addicks. 11 flow sheet Am Inst Min E Bul 108:1471-84 Ag '15; Same. Met & Chem Eng 13:581-5 S 1 '15; Discussion. Am Inst Min E Bul 108:2460-4 D '15

- Temporary traveling cableway for tailings reclamation. 11 Eng & Min J 100:673 O 23 '15

**Talc**

- Talc and soapstone in 1914. Eng & Min J 100:435 S 11 '15

**Tamalpais, Mt.**

- Tackling Tamalpais. F. E. Olmsted. 11 Am For 20:887-93 D '14

**Tamarinds**

- Tamarind syrup. W. C. Taber. J Ind & Eng Chem 7:607-9 J1 '15

**Tamping machines**

- Mechanical trench tamping. W. A. Kellogg. 11 Munic Eng 49:39-40+ J1 '15

- Pneumatic tie tamper. 11 Ry Age 58:473-4 Mr 12 '15

- Pneumatic track tamping. 11 Eng Rec 70:689 D 26 '14

- Tamping track with air power. 11 Eng N 72:1219 D 17 '14

**Tank cars**

- Carriers must furnish tank cars. Ry R 56:855-6 Je 19 '15

- Handling of fuel oil in extreme climatic conditions; abstract. Am Soc M E J 37:420 J1 '15

**Tank ships**

- Conversion of cargo vessels into bulk oil carriers. F. K. Ruprecht. diags Int Marine Eng 20:165-6, 212-16, 258-9, 309-11, 340-3, 404-6 Ap-S '15

- Evolution of the oil tank ship; abstracts. H. Barringer. Engineer 119:560 Je 4 '15; Int Marine Eng 20:417 S '15

**Tank ships—Continued**

- Launch of the Gulfcoast. *Il Int Marine Eng* 20: 199 My '15  
 Motor boat Kern. *Il plan Int Marine Eng* 20: 489 N '15  
 Tank ship construction. R. W. Morrell. *diags Int Marine Eng* 19:532-4; 20:26-9, 71-8 D '14, Ja-F '15  
*See also* Gulfight

**Tanks**

- Calibration charts for Vanderbilt tenders. T. Price. *Ry Age (Mech ed)* 89:582-5 N '15  
 Calibration curve for horizontal cylindrical tanks. Met & Chem Eng 13:511 Ag '15  
 Capacity of cylindrical tanks; a rapid means of determining the contents of tanks of all of the usual lengths and diameters. Horseless Age 36:76 Jl 21 '15  
*See also* Coal tanks; Hot-water tanks; Septic tanks; Sewage tanks; Surge tanks; Tank cars; Tank ships; Water tanks

**Tanks, Concrete**

- Concrete tanks for dye-houses. L. C. Wason; W. M. Kinney. *Concrete Cem* 6:159 Mr '15  
 Concrete tanks for dye houses. R. R. Newman. *Concrete Cem* 7:82 Jl '15  
 Concrete vats and tanks. W. M. Kinney. *Concrete Cem* 6:158-9 Mr '15  
 Oil-proof reservoirs of concrete. W. M. Kinney. *Concrete Cem* 6:251-2 My '15  
 Reinforced-concrete tank of 100,000-gallon capacity designed by use of diagrams. A. R. James. *diags Eng Rec* 72:135-6 Jl 31 '15  
*See also* Water towers, Concrete

- Tanks, Sewage. *See* Imhoff tanks; Septic tanks; Sewage tanks

**Tanks, Steel**

- Galvanized corrugated steel tanks in Australia. H. W. Mitton. *Metal Work* 83:702 My 14 '15  
 Moving large steel grain tanks. *Il Sci Am* 113: 185 Ag 28 '15  
 Rebuilding a burned oil tank. C. P. Bowie. *Il Eng N* 74:976-7 N 18 '15

**Tanning**

- Contributions of the chemist to the leather industry. W. H. Teas. *J Ind & Eng Chem* 7: 283 Ap '15

**Tannins**

- Tannin content of Pacific coast conifers. H. K. Benson and T. G. Thompson. *Il J Ind & Eng Chem* 7:915-16 N '15

**Tantalum**

- Atomic weight of tantalum. G. W. Sears and C. W. Balke. *diags Am Chem Soc J* 37:833-44 Ap '15

**Tapalogs**

- Tapalog, a new multiple record pyrometer recorder. *Il Met & Chem Eng* 13:260-1 Ap '15; *Iron Age* 95:609 Mr 18 '15; *Elec W* 65:871 Ap 3 '15; *Power* 41:541 Ap 20 '15

- Tape, Insulating. *See* Insulating tape

- Tape, Steel. *See* Steel tape

**Tapping machines**

- Langelier semi-automatic multiple tapping machine. *Il Mach* 21:425-6 Ja '15  
 National automatic nut tapper. *Il Mach* 21: 515-17 F '15; *Iron Age* 95:240 Ja 28 '15; *Iron Tr R* 56:268-9 F 4 '15; *Ind Eng* 15:11-12 Ja '15  
 New principle in nut tapping machinery. *diag Ry R* 56:812-13 Je 12 '15  
 Tapping and countersinking machine. *Il Iron Age* 96:515 S 2 '15

**Taps**

- A. S. M. E. tap limits. *Mach* 21:474-5 F '15  
 Collapsible tap of new design, by the modern tool co. *Il diags Iron Tr R* 57:692-3 O 7 '15; *Ry Age (Mech ed)* 89:544-5 O '15  
 Collapsing adjustable shrapnel tap. *Il Iron Age* 96:745 S 30 '15  
 Collapsing tap for shell work. *diag Iron Tr R* 57:447 S 2 '15  
 Tap and screw limits. *diags Mach* 22:54-7 S '15  
 Victor shrapnel shell tap. *Il diag Mach* 22:70 S '15

**Tar**

- Centrifugal dehydration of water gas tar at Amsterdam. *Am Gas Light J* 102:349 My 31 '15  
 Development of refined tars for use in road construction and maintenance. F. P. Sharples. *Met & Chem Eng* 13:518-20 D 1 '15  
 Electrical process for detarring gas. F. W. Steere. *Il diag Met & Chem Eng* 12:776-8 D '14; *Same. Am Gas Inst Pro* 9:pt 1, 178-89 '14; *Same cond. Eng N* 72:1007 N 19 '14; *Same cond. Eng M* 48:788-9 F '15; *Discussion. Am Gas Inst Pro* 9:pt 1, 189-99 '14  
 Oil tar separation, recovery and disposal. R. El. Wyant. *Am Gas Inst Pro* 9:pt 1, 813-19; *Discussion*. 319-39 '14  
 Physical constants of gas oils and derived tars. W. F. Rittman and G. Egloff. *J Ind & Eng Chem* 7:481-4 Je '15  
 Specific gravity—its determination for tars, oils and pitches. J. M. Weiss. *Il J Ind & Eng Chem* 7:21-4 Ja '15  
 Tar paint proves better than lead paint on pipes. B. Dibble. *Eng Rec* 72:349-50 S 18 '16; *Same. Eng N* 74:973-4 N 18 '15; *Same cond. Eng & Contr* 44:181 S 8 '15  
*See also* Coal tar; Gas manufacture and works; Roads, Tarred

**Tar as fuel**

- Heating an open-hearth furnace by tar. A. Greiner. *Iron Age* 95:1072-3 My 13 '15; *Same. Engineer* 119:495 My 14 '15; *Same. Iron Tr R* 56:1017-18 My 20 '15; *Abstract. Met & Chem Eng* 13:445 Jl '15

**Target practice**

- Target practice in our navy. *Sci Am* 113:58 Jl 17 '15

*See also* Rifle ranges

**Tariff**

- Anti-dumping legislation in Canada, South Africa, and Australia. *Textile World* 50:178-9 N '15  
 Tariff and the ultimate consumer. H. C. Emery. *Textile World* 50:179-83 N '15  
*See also* Drawbacks

**Canada**

- Canada's new tariff. *Iron Age* 95:538 Mr 4 '15  
 Working of Canada's anti-dumping law. *Iron Age* 96:758-9 S 30 '15

**India**

- British India. *U S Sp Cons Rep* 72:135-7 '15

**United States**

- Component material of chief value. *Il Textile World* 50:51-4 O '15  
 Home market club annual meeting, Nov. 13, 1914. *Textile World* 48:302-4 D '14  
 Lest we forget! Who killed Cock Robin? The U. S. tariff-history of coal-tar dyes. B. C. Hesse. *J Ind & Eng Chem* 7:694-709 Ag '15; *Excerpts. Textile World* 49:593-6 S '15  
 Letters of Messrs. Tripp and Matthews on business conditions. W. F. Hickernell. *Elec W* 65:972-3 Ap 17 '15  
 Necessity of tariff reform for the American chemical industries. H. H. Gross. *Met & Chem Eng* 13:878 O 1 '15  
 Who killed Cock Robin? notes on the tariff history of coal-tar dyes. *Sci Am* S 80:135 Ag 28 '15  
*See also* Cotton tariff

- \*Tarred roads. *See* Roads, Tarred

**Tartaric acid**

- Manufacture of cream tartar. O. Best. *Met & Chem Eng* 13:813-17 S 15 '15

**Task system**

- Results of task work without bonus in cleaning filter sand at Philadelphia. S. H. Thompson. *Eng Rec* 70:608-9 D 5 '14; *Same. Eng & Contr* 42:579-81 D 28 '14; *Same cond.; with discussion. Am Soc M E J* 37:102-4 F '15; *Same cond. (Efficiency study of filter cleaning). Munic J* 38:253-4 F 25 '15  
 Task setting. C. J. Morrison. *Eng M* 49:894-900 S '15  
*See also* Bonus system

**Taxation**

New York tax list: fluctuation of real estate values due to lack of regulation of the character of buildings. *Am Inst Arch J* 2:572-8 D '14

Taxes in Colombia. J. F. Dierolf. *Eng & Min J* 99:874 My 15 '15

See also Electric railroads—Taxation; Income tax; Mine taxation; Municipal finance; Public service corporations—Taxation; Tar-iff

**Taxicabs, Electric**

Electric taxicabs. A. J. Marshall. *Elec R & W Elec'n* 66:686-6 Ap 10 '15

Electric taxicabs in Detroit reduce operating costs 40 per cent. *1 Elec R & W Elec'n* 67:871-2 N 6 '15

Why electric taxicabs should succeed. I. S. Scrimger. *Automobile* 33:760-1 O 21 '15

**Taylor, Frederick Winslow, 1856-1915**

Father of scientific management and co-inventor of high-speed steel. *por Iron Age* 95:676-8 Mr 25 '15

Great engineer passes away. *por Iron Tr R* 56:604-6 Mr 25 '15

Memorial meeting of the Society to promote the science of management. *Iron Age* 96:1029-30 O 28 '15

Memorial meeting of the Society to promote the science of management. *Iron Tr R* 57:827 O 28 '15

Sketch. H. R. Towne. *por Eng M* 49:160-3 My '15

**Tea rooms and tea houses**

Assembly tea rooms, Boston; views. *Arch Rec* 37:83-7 Ja '15

**Teachers, Training of**

Training of shop teachers for industrial schools. H. E. Speece. *Mach* 22:47-8 S '15

**Teak wood**

Mechanical properties of teak wood; abstract. A. Weiskopf. *Am Soc M E J* 37:289-90 My '15

**Technical commissioners. See Consular service****Technical education**

New ideas in mechanical education. *Mach* 22:164-5 O '15

Technical training in India. *Engineer* 120:429-30 N 5 '15

Training for the industrial side of engineering. A. P. M. Fleming. *Inst E E J* 53:570-3; Discussion. 53:574-86 Ap 15 '15

See also Apprentices; Correspondence schools and courses; Engineering education; Foundry practice—Study and teaching; Industrial education; Mining schools and education; Professional education; Railroad education; Schools and shops, Cooperation of; Trade schools; Vocational education; also Throop college of technology

**Technical journals. See Engineering periodicals****Technical literature, Joint committee on classification of. See Joint committee on classification of technical literature****Technical writing**

Bettering the use of English. S. C. Earle. *Elec Ry J* 45:94 Ja 9 '15

Faults of technical literature. R. Fleming. *Eng N* 74:548-9 S 16 '15

Writing technical articles. H. T. Owens. *Am Gas Light J* 102:1-2 Ja 4 '15

**Technology**

Philosophy and technics. G. Bugge. *Sci Am* 879:124 F 20 '15

See also Building; Chemistry, Technical; Classification; Electric engineering; Engineering; Industrial education; Machinery; Metallurgy; Photography; Railroad engineering; Technical education; also names of specific industries, trades, etc., e. g. Paper making, Printing

**Teeth**

Recognizing vocations from the teeth. *11 Sci Am* 879:300 My 8 '15

**Telautograph**

Facsimile telegraphy and phototelegraphy. *Sci Am* 112:571+ Je 5 '15

**Telegraph**

Censorship of railway messages. W. W. Hall. *Ry Age* 58:1479 Je 25 '15

**Census of telephone and telegraph systems.**

*Elec W* 65:625-6 Mr 6 '15

**Census report on telephones and telegraphs.**

*Elec R & W Elec'n* 66:444-5 Mr 6 '15

Communicating over great distances; the invention of the telegraph, telephone and wireless telegraphy. *11 Sci Am* 112:531-2 Je 5 '15

**Future progress of cable telegraphy; abstract.**

H. W. Malcolm. *Elec W* 65:1685 Je 26 '15

Railway telegraph superintendents' annual convention. *Ry Age* 59:19-20 J1 2 '15

**Telegraph relays; abstract.**

H. W. Malcolm.

*diags Elec W* 65:403-4 F 13 '15

Year in the electrical industry. *Elec R & W Elec'n* 66:5-6 Ja 2 '15

See also Cables, Submarine; Electric wire and wiring; Military telegraph; Poles; Train dispatching; Wireless telegraph

**Picture transmission****See Phototelegraphy****Telegraph, Military. See Military telegraph****Telegraph, Printing**

High speed and printing telegraphs. *11 Sci Am* 112:532 Je 5 '15

High-speed printing telegraph system. C. Kinsley. *11 Am Inst E E Pro* 33:1071-81 Je '14; Same cond. *Sci Am S* 80:84-5 Ag 7 '15;

Discussion. *Am Inst E E Pro* 33:1898-1905 D '14

New printing telegraph system developed for the Western union company using the type-writer-printing principle. P. M. Rainey. *11 diags Elec W* 65:848-87 Ap 3 '15

Printing telegraph. *11 Sci Am S* 80:252-3 O 16 '15

System of long distance typewriting; eight messages sent simultaneously over a single wire. *11 Sci Am* 112:438+ My 8 '15

Western Union multiplex printing telegraph. D. Murray. *Elec W* 65:1284-5 My 22 '15

**Telegraph, Submarine. See Cables, Submarine****Telegraph, Wireless. See Wireless telegraph****Telegraph poles. See Poles****Telemeter, Stereoscopic. See Stereoscopic telemeter****Telephone**

Audion telephone repeater. F. M. Williamson. *Elec W* 65:900 Ap 10 '15

Automatic switchboard telephone system of Los Angeles, Cal. W. L. Campbell. *11 Am Inst E E Pro* 34:1847-71 Ag '15

Automatic telephone system at the Kansas City terminal. *11 Ry R* 55:768-70 D 26 '14

**Census of telephone and telegraph systems.**

*Elec W* 65:625-6 Mr 6 '15

**Census report on telephones and telegraphs.**

*Elec R & W Elec'n* 66:444-5 Mr 6 '15

Chest telephone for aeroplane pilots. *11 Sci Am* 113:255 S 18 '15; *Elec R & W Elec'n* 67:211-12 J1 31 '15

Communicating over great distances; the invention of the telegraph, telephone and wireless telegraphy. *11 Sci Am* 112:532+ Je 5 '15

Compact service board in Boston telephone building. *11 Elec W* 65:1261-2 My 15 '15

Cordless vestibule telephone. *11 Elec W* 66:421 Ag 21 '15

Development of the national telephone system. M. C. Rorty. *Am Soc M E J* 37:709-10 D '15

Electrical equipment for enabling the deaf to hear. *11 Elec W* 66:1221-2 N 27 '15

Explorations over the vibrating surfaces of telephonic diaphragms under simple impressed tones. A. E. Kennelly and H. O. Taylor. *Elec W* 66:463 Ag 28 '15

How Bell invented the telephone. T. A. Watson. *Am Inst E E Pro* 34:1503-13 Ag '15

Operating features of the audion: explanation of its action as an amplifier, as a detector of high-frequency oscillations and as a valve. E. H. Armstrong. *diags Elec W* 64:1149-52 D 13 '14

Railroad tracks as conductors for telephonic communication. *11 Sci Am* 113:363+ O 23 '15

Recent telephone patents. *diag Elec W* 65:993, 1120 Ap 17, My 1 '15

Relative cost of manual and automatic telephony. *Elec R & W Elec'n* 66:300 F 13 '15

Telephone dispatching at San Antonio. *11 Elec Ry J* 46:92-3 J1 17 '15



**Telephone—Continued**

- Telephone dispatching in city service. E. E. Strong. *Il Elec Ry J* 45:885-7 My 8 '15
- Telephone dispatching on street-railway lines. *Il Elec R & W Elec'n* 65:1150-1 D 12 '14
- Telephone equipment for churches. *Il Elec R & W Elec'n* 67:488-9 S 11 '15; *Elec W* 66:711 S 25 '15
- Telephone switch. J. D. Lewis. *diags Elec R & W Elec'n* 66:549 Mr 20 '15
- Telephone that tells who called while you were out. *Il Elec W* 66:18 JI 8 '15
- Telephone train dispatching on the Cedar Rapids & Iowa City railway. *Il Elec Ry J* 44:1809 D 12 '14
- Telephone troubles in the tropics. W. L. Preece. *diags Inst E E J* 53:545-51 Ap 15 '15; Abstracts. *Elec R & W Elec'n* 66:738-9 Ap 17 '15; *Eng M* 49:424-5 Je '15; *Sci Am S* 79:355 Je 5 '15; Discussion. *Inst E E J* 53:551-65 Ap 15 '15
- Telephones for use in mine rescue work demonstrated at San Francisco. *Il Elec R & W Elec'n* 66:830 My 1 '15
- Telephony and telegraphy session of Am. Inst. E. E. *Elec R & W Elec'n* 67:570-2 S 25 '15
- Thermal telephone: abstract. M. de Lange. *Il Elec W* 65:96 Ja 9 '15
- Thermophone. *Sci Am* 113:87 JI 24 '15
- Toll telephone traffic: an experimental study of the relationship between circuit loads and delay to traffic. F. F. Fowle. *Am Inst E E Pro* 33:1063-70 Je '14; Discussion. 33:1896-7 D 14
- Year in the electrical industry. *Elec R & W Elec'n* 66:5-6 Ja 2 '15
- See also* Electric wire and wiring; Telephone lines; Wireless telephone

**Extension systems**

- Industrial plant to install extensive private telephone system. *Il Elec R & W Elec'n* 65:1192-3 D 19 '14
- Locating an executive in the factory. H. A. Russell. *plan Iron Age* 95:344-5 F 11 '15

**Intercommunicating systems**

- Couch autophone system. *Il Eng M* 49:sup8-4 S 15
- Intercommunicating telephone systems. T. L. Lee. *Elec R & W Elec'n* 66:859-61 My 8 '15

**Rates**

- Columbia, Mo., telephone company. *Elec R & W Elec'n* 66:955-6 My 22 '15
- New York telephone rate revision. *Eng N* 73:691, 697 Ap 8 '15
- Telephone, Military. *See* Military telephone
- Telephone association, National Independent. *See* National independent telephone association

**Telephone booths**

- Ventilation of telephone and movie booths. R. L. Douglass. *Dom Eng* 69:161-2 N 7 '14; Same; with discussion. *Am Soc Heat & V E* 20:330-6 '14

**Telephone cables**

- London-Birmingham-Liverpool telephone cable. *diags Engineer* 120:277 S 17 '15

**Telephone companies**

- American telephone annual report. *Elec W* 65:752-4 Mr 20 '15
- Annual report of the American telephone and telegraph company for the year ended December 31, 1914. *Elec R & W Elec'n* 66:532-3 Mr 20 '15
- Ettrick telephone company: rates to stockholders. *Elec R & W Elec'n* 67:56-7 JI 10 '15
- National independent telephone association annual convention, Chicago, February 3 to 6. *Elec R & W Elec'n* 66:305-8 F 13 '15

**Accounting**

- Interstate commerce commission's uniform system of accounts for class C telephone companies—objections as set forth in the brief submitted by the Wisconsin railroad commission. *J Account* 19:398-401 My '15

**Telephone in war. See** Military telephone**Telephone lines**

- Across the continent by telephone. *Il map Elec R & W Elec'n* 66:210-15 Ja 30 '15

- Across the continent by telephone. *Il Sci Am* 112:129 F 6 '15; Same cond. *Eng M* 48:908-9 Mr '15

- Aerial telephone-cable terminal. *Il Elec R & W Elec'n* 67:686 O 9 '15

- High voltage arrester for telephone lines. E. P. Peck. *Il Gen Elec R* 18:189-94 Mr '15

- Inauguration of transcontinental telephony. *diag map Elec W* 65:279-80 Ja 30 '15

- Protecting linemen when using telephone circuits paralleling transmission lines. *Il Elec W* 66:812 O 9 '15

- Pupin coils for telephone lines; abstract. F. Breisig. *Elec W* 66:800 S 11 '15

- Submarine cable rapid telegraphy; ocean and intercontinental telephony. B. Gatl. *Il diags Am Inst E E Pro* 34:2101-29 S '15

- Trigonometric expressions for the phenomena occurring in long transmission lines. V. Karapetoff. *Elec W* 66:914-15 O 23 '15

**See also** Telephone cables**Telephone poles. See** Poles

- Telephone receiver connected to calipers. A. J. Carr. *diags Power* 41:621 My 4 '15

**Telephotography**

- Air transparency for infra-red rays: application of these rays to telephotography. G. Michaud and J. F. Tristan. *Il Sci Am* 111:521 D 26 '14

**See also** Phototelegraphy**Telescope sights**

- Telescope sights for fighting rifles. E. C. Crossman. *Il Sci Am* 113:118-19 Ag 7 '15

**Telescopes**

- Measurement of distances in war. A. Keller. *Il diags Sci Am S* 79:324-5 My 22 '15
- Power of telescopes. W. E. Woolard. *Sci Am S* 80:46 JI 17 '15

**See also** Periscope**Telpherage**

- Electrical appliances for workshops. *Il diag Engineer* 120:40-1 JI 9 '15
- Telpher furnace charging. N. Kapp. *diags Iron Age* 94:1388-9 D 17 '14
- Telphers expedite coal movement at German plant. A. Gradenwitz. *Il Eng Rec* 71:615 My 15 '15

**See also** Cableways; Conveying machinery**Temperament**

- Antecedents of the study of character and temperament. J. Jastrow. *Sci Am S* 80:191-2 S 18 '15
- Modern psychology: the present study of character and temperament. J. Jastrow. *Sci Am S* 80:306-7 N 13 '15

**Temperance**

- Intoxication, a cause of accidents. T. D. West. *Il Iron Tr R* 56:713-16 Ap 8 '15; Same. *Foundry* 43:267-70 JI '15

**Temperature**

- Effect of moisture in the earth on temperature of underground cables. L. E. Imlay. *diags Am Inst E E Pro* 34:263-70 F '15; Discussion. 34:2615-19 N '15

- See also* Boiling points; Earth temperature; Freezing points; Melting points

**Measurement**

- Conversion scale for centigrade and fahrenheit temperatures. H. P. Tiemann. *Am Inst Min E Bul* 108:1247-8 Je '15; Same. *Iron Age* 96:31 JI 1 '15; Discussion. *Am Inst Min E Bul* 108:2512-13 D '15
- Course in high temperature measurements at Purdue university. H. S. Ferry. *Il Met & Chem Eng* 12:454-5 JI '15
- Determination of critical points in iron, steel and alloys. *Il diags Met & Chem Eng* 13:643-4 S 15 '15
- Limits of experimental investigation. *Sci Am S* 80:83 Ag 7 '15
- Measurement of rapidly changing temperatures; abstract. A. Petersen. *Met & Chem Eng* 13:189 Mr '15
- Measuring atmospheric comfort. *Il Sci Am* 112:481 My 8 '15
- Potentiometers for thermoelectric measurements especially in calorimetry. W. P. White. *diags Am Chem Soc J* 36:1868-85 S '14

**Temperature—Measurement—Continued**

Temperature changes in mass concrete found to be relatively small. Eng Rec 71:710 Je 5 '15

Temperature measurements in concrete buildings. Concrete Cem 6:155-7 Mr '15

Temperature of the mercury arc. J. C. McLennan. Sci Am S 79:107 F 13 '15

Thermoelement installations, especially for calorimetry. W. P. White. diags Am Chem Soc J 36:1856-68 S '14

See also Freezing points; Pyrometers and pyrometry; Thermometers; Thermophones; Thermopiles

**Temperature, Atmospheric.** See Atmospheric temperature

**Temperature, High**

Classification of high-temperature physical problems. E. F. Northrup. Met & Chem Eng 13:147-50 Mr '15

Course in high temperature measurements at Purdue university. E. S. Ferry. II Met & Chem Eng 13:454-5 Jl '15

Estimation of high temperatures by the method of color identity. Met & Chem Eng 13:444 Jl '15

High temperature investigation and a study of metallic conduction. E. F. Northrup. J Fr Inst 179:321-62 Je '15; Abstract. Elec W 65:1514-15 Je 19 '15

Producing the effective temperature of the sun. Sci Am 112:323+ Ap 3 '15

Properties of metals at higher temperatures; abstract. P. Ludwik. Am Soc M E J 37:604-5 O '15

**Temperature, Low**

Absolute zero. S. Dushman. diags Gen Elec R 18:93-100, 238-48 F, Ap '15

Behavior of enzymes at low temperatures. J. S. Hepburn. J Fr Inst 179:581-5 My '15

Electrical resistance as effected by very low temperatures. Sibley J 29:106-7 Ja '15; Same. Sci Am S 78:82 F 6 '15

Kammerlingh Onnes, the Dutch specialist in cold. por Sci Am 112:151+ F 13 '15

Thermometry of low temperatures. Sci Am 113:265 S 25 '15

**Temperature recorders**

Multiple-type recording instrument for pyrometers. II Met & Chem Eng 13:643 S 15 '15

Recording instruments, for heat-treating. II Automobile 32:480-1 Mr 11 '15

Tapalog, a new multiple record pyrometer recorder. II Met & Chem Eng 13:360-1 Ap '15; Iron Age 95:809 Mr 18 '15; Elec W 65:871 Ap 3 '15; Power 41:541 Ap 20 '15

**Temperature regulators.** See Thermostats

**Temples**

Mysterious Baalbek. Mrs. T: E. LePage. II Sci Am S 78:407-10 D 26 '14

**Templets**

Cardboard templets for laying out structural work. Eng N 74:461-2 S 2 '15

Rail templet for use in valuation inventory. F. V. Purcell. diag Ry Age 59:980 N 19 '15

Templet for curve-worn rail. diag Ry Age 59:970 N 19 '15

**Tenants.** See Landlord and tenant

**Tenders, Locomotive.** See Locomotive tenders

**Tenders, Naval**

Auxiliary naval vessels; classification of naval vessels—description of the destroyer tender Melville. II Int Marine Eng 20:295-7 Jl '15

**Tenement houses**

Sanitary engineer's views on housing. T: J. Claffy. II Dom Eng 73:45-6 O 9 '15

See also Housing problem

**Tennessee**

See also Geology—Tennessee

**Tennessee master plumbers' association**

15th annual convention, Nashville, March 22. Dom Eng 70:413-14 Mr 27 '15

**Tennis**

Science as an aid to practical tennis. D. Douglass. Sci Am 113:480+ N 13 '15

Tennis as compared to golf. D. Douglass. Sci Am 113:383 O 30 '15

Throwing vs. batting a tennis ball. D. Douglass. II Sci Am 113:254 S 18 '15

**Terblum**

Chemical research on terblum. C. James and D. W. Bissel. Am Chem Soc J 36:2060-6 O '14

**Terminal companies**

Federal valuation of joint facilities. R: J. McCarty. Ry Age 58:699 Mr 26 '15

**Terminals**

Cotton warehouse and terminal at New Orleans. diag Eng N 73:1217 Je 24 '15

Design and construction features of the Ocean steamship co.'s terminal at Savannah, Ga. II plans Eng & Contr 44:343-4 N 3 '15

Export coal terminal of the Southern railway at Charleston, S. C. II Ry R 57:820-1 N 13 '15

Handling of freight in terminals. R. H. Rogers. Am Inst E E Pro 34:3048-52 D '15

Hunt's Point terminal in New York involves difficult bulkhead construction. II diags map Eng Rec 73:104-6 Jl 24 '15

Marine terminal machinery. H. Sawyer. Int Marine Eng 20:109-11 Mr '15

New deep water pier at Halifax, Nova Scotia. A. F. Dyer. II Concrete Cem 7:7-13 Jl '15; Same cond. Eng N 73:1204-10 Je 24 '15

New marine terminals at Beaumont, Texas; abstracts. H. M. Harding. II plan Eng N 73:1072-3 Je 3 '15; Eng & Contr 43:sup28 My 19 '15; Eng Rec 71:721 Je 5 '15; Int Marine Eng 20:299-300 Jl '15; Ry R 57:679-81 N 27 '15

New York freight terminals, 1914. Ry Age 59:395-7 Ag 27 '15

Newark is rapidly creating its own water terminal in New Jersey meadows. II diags plan Eng Rec 73:201-3 Ag 14 '15

Novel bulkhead for wharves at Jacksonville. H. D. Mendenhall. diags map Eng N 74:772-4 O 21 '15

Points of attack in the terminal problem. J. A. Jackson. II Int Marine Eng 20:111-13 Mr '15

Possibilities open to the central station in solving the freight terminal problem. J. A. Jackson. Gen Elec R 18:1142-4 D '15

River terminal at East St. Louis, Ill. diags Eng N 74:543 S 16 '15

Santa Fe to solve Chicago fruit terminal problem. plan Eng Rec 71:819-20 Je 26 '15

Steamship terminal in the Bronx. II diag maps Sci Am 112:80-1 Ja 23 '15

Terminals the need of inland water transportation; New Orleans report. Eng Rec 72:565-6 N 6 '15

Transfer facilities at marine terminals. H. M. Harding. II Int Marine Eng 20:98-102 Mr '15

Water terminals on the Mississippi river. Eng N 73:507 Mr 11 '15

See also Docks; Freight handling; Locomotive terminals; Ports; Railroads—Terminals; Street railroads—Terminals

**Terminals, Railroad.** See Railroads—Terminals

**Terminology.** See Electric wire and wiring—Terminology; Road materials—Terminology; Science—Terminology

**Ternary mixtures**

Partial vapor pressures of ternary mixtures of toluene, carbon tetrachloride and ethylene bromide. M. A. Rosanoff, J. F. W. Schulze, and R. A. Dunphy. Am Chem Soc J 36:2480-95 D '14

**Terra cotta**

Suggestions for laying terra cotta. Bldg Age 37:33 F '15

**Terraces**

Mapping terraces at the Zoo. R. N. Stroyer. II diags Engineer 119:156-7 F 12 '15

**Tesla, Nikola, 1857-**

Nikola Tesla's fountain. II Sci Am 112:162 F 13 '15

Personal recollections. por Sci Am 112:587+ Je 5 '15

**Test roads.** See Roads, Experimental

**Testing**

American society for testing materials annual meeting, June 22-26; abstracts of papers and discussions. Eng N 74:36-41, 67-9 Jl 1-3 '15

American society for testing materials 18th annual meeting. Power 42:33-6 Jl 6 '15

Fixing the elastic limit standard. T. D. Lynch. II Iron Tr R 57:79-81+ Jl 8 '15

**Testing—Continued**

Notch shock tests and the law of similarity; abstract. R. Striebeck. *diag Am Soc M E J* 37:183-4 Mr '15

Pennsylvania railroad test department. C. D. Young. *Il plan Ry Age (Mech ed)* 89:332-7 J1 '15; Same. *Ry Age* 89:6-11 J1 '15; Same. *Ry R* 57:2-5, 42-6, 117-18 J1 3-10, 24 '15

*See also* Electric testing; Freezing tests; Laboratories; Strength of materials; Testing machines; also subject tested, e. g. Boilers—Testing, Cement testing, Coal testing, Concrete—Testing, Gas and oil engines—Testing, Gas testing, Steam engines—Testing, Steel—Testing; also American society for testing materials

**Testing, Electric.** *See* Electric testing

**Testing machines**

British Portland cement making machinery.

*Il diag Engineer* 120:173-6 Ag 20 '15

Cause of brittleness in soft steel: German tests on a Krupp shock-testing machine. *Iron Age* 94:1322-3 D 8 '14

Charpy impact test on treated steels. J. J. Thomas. *Il Iron Age* 96:138-40 J1 15 '15

Colburn twist drill testing machine. *Il Mach* 22:251-2 N '15

Cylinder friction and lubrication testing apparatus. A. Flowers. *diag Power* 42:208-10 Ag 10 '15

Dynamic properties of cast steel. J. L. Uhler. *Il Iron Tr R* 57:630-3 S 30 '15; Same. *Iron Age* 96:754-6 S 30 '15; Same. *Foundry* 43:417-19 O '15

Field testing machine used on Welland ship canal. *Il diag Eng Rec* 72:112 J1 24 '15

Fifty-ton testing machine built in college shop. C. C. Myers. *Il diag Eng N* 74:1050-1 N 25 '15

Flotation testing machine. R. W. Smith. *diags Eng & Min J* 100:395-8 S 4 '15

Hydraulic hardness testing machine. *Il Met & Chem Eng* 13:648 S 15 '15

Hydraulic testing machine. *Il Iron Tr R* 56:519 Mr 11 '15

Kick vs. Rittinger: an experimental investigation in rock crushing, performed at Purdue university. A. O. Gates. *Il diags Am Inst Min E Bul* 105:2023-51 S '15

Laps and lapping. W. A. Knight and A. A. Case. *diags Am Soc M E J* 37:451-6 Ag '15; Same cond. *Iron Tr R* 57:24-6 J1 1 '15; Discussion. *Am Soc M E J* 37:456-8 Ag '15

Motor driven Universal tester for fabrics. *Il Textile World* 50:123 O '15

New rope-testing machine. *Il diag Eng N* 74:172-3 J1 23 '15

Pneumatic drop machine for the foundry. G. S. Evans. *Il Iron Age* 96:574-5 S 23 '15

Results obtained with ground hobs. E. K. Hammond. *Il diag Mach* 21:695-700 My '15

Smoothness-testing machine for pavements. *Il Eng N* 74:751-2 O 14 '15

Testing surveyors' tapes by the Canadian government. J. A. Macdonald. *Il Eng N* 74:414-15 Ag 26 '15

Testing the consistency of asphalt. *Il Sci Am* 113:286-7 S 11 '15

Testing the hardness of iron castings. G. S. Evans. *Il diag Iron Age* 96:8-10 J1 1 '15

Tool for hardness tests developed by L. Loewe & co. H. Friedmann. *Il Iron Tr R* 57:899 N 4 '15

Universal strainometer of simple design. S. H. Graf. *Il Iron Age* 96:134-5 J1 15 '15

Von Kapff's oil testing machine; abstract. *Am Soc M E J* 37:413-13 J1 '15

Walker wedge testing machine. *Il Iron Tr R* 57:438 S 2 '15

Watch spring testing apparatus. *Il Sci Am* 111:494 D 12 '14

**Tetanus**

Tetanus serum for the French army. *Sci Am* S 80:5 J1 3 '15

Vaccine virus not the cause of tetanus. *Sci Am* S 80:155 S 4 '15

**Texas**

*See also* Roads—Texas

**Industries and resources**

Investigation of sources of potash in Texas. W. B. Phillips. *Il Am Inst Min E Bul* 98:115-27 F '15

Petroleum in Texas and Louisiana. A. J. Hazlett. *Eng & Min J* 99:187-9 Ja 16 '15

Textile association, Southern. *See* Southern textile association

**Textile design**

Designs for a basket weave. *Il Textile World* 49:537 Ag '15

Hand book of weaves. G. H. Oelsner. *Il Textile World* 46:408-11, 503-6, 586-9; 47:37-9, 280-2, 317-9, 408-12, 504-7, 594-9; 48:122-7, 208-12, 316-21, 400-3, 496-501, 589-93; 49:87-91, 163-7, 337-42 Ja '14-Je '15

*See also* Design, Decorative

**Textile fibers**

Fibers not generally known. R. Dantzer. *Textile World* 48:404-5 Ja '15

Germans find substitute for jute and hemp. H. G. Seltzer. *Textile World* 49:642 S '15

Preparing flax or hemp for spinning. *Textile World* 49:427-8 Ap '15

*See also* Cotton; Flax; Hemp; Silk; Wool

**Textile finishing**

Manufacture of elastic fabrics. S. Brown. *Il diags Textile World* 48:394-7 Ja '15

Prein finishing process for textiles. *Textile World* 48:426 Ja '15

Process for treating open-mesh fabrics. *Textile World* 49:641-2 S '15

Process for treating yarn and twine. *diag Textile World* 49:460-1 J1 '15

*See also* Wool finishing

**Textile industry and fabrics**

British India; textile manufactures. U S Sp Cons Rep 72:235-58 '15

Contributions of the chemist to the textile industry. F. W. Hobbs. *J Ind & Eng Chem* 7:280-1 Ap '15

European textile industry. *Textile World* 49:405-3 J1 '15

French army contracts modified for the benefit of Americans. *Textile World* 49:321-2 Je '15

Measuring of textile fabrics. E. H. Marble. *Textile World* 49:35-7 Ap '15

Our textile industries and Europe's calamity. A. H. Gulliver. *Textile World* 49:223-4 My '15

Secretary Redfield and the textile industry. *Textile World* 48:286a-286c D '14

Situation in Germany. *Textile World* 48:564-7 Mr '15

Tariff and the ultimate consumer. H. C. Emery. *Textile World* 50:179-83 N '15

Textile industries of Great Britain and Germany. J. A. Hunter. *Textile World* 48:597-600; 49:328-31 Mr, Je '15

Textile trade in Germany. *Textile World* 48:376-8 Ja '15

War and our chemical industries. W. D. Livermore. *J Ind & Eng Chem* 7:61 Ja '15

Woven fabric for fire hose. *Il Textile World* 49:425-6 J1 '15

*See also* Bleaching; Cotton; Cotton fabrics; Drying apparatus (for textile fabrics); Dyes and dyeing; Elastic fabrics; Pulling; Gas mantles; Haircloth; Hosiery; Knit goods; Lace; Shoe cloth; Silk; Spinning; Textile design; Textile fibers; Textile finishing; Textile machinery; Textile mills; Textile printing; Underwear; Weaving; Wool; Woolen and worsted manufacture; Worsted; Yarn

**Cloth inspection**

Inspection of white cloth. *Textile World* 49:98-9 Ap '15

**Cloth testing**

Testing cloth for its wearing qualities. *Textile World* 49:660-1 S '15

Testing the resistance to wear of cloth. *Textile World* 48:480-1 Ja '15

**Exhibitions**

Southern textile exposition, Greenville, S. C., Nov. 2-6; with list of exhibitors. *Textile World* 50:65-6, 166-76 O-N '15

**Law**

Pure fabric legislation. K. B. Lamb. *Textile World* 50:152-3 N '15

**Textile industry and fabrics—Law—Continued**  
 Pure fabrics. H. B. Cheney. *Textile World* 60:192-5 N '15  
 Smith pure textile bill. *Textile World* 49:63-4 Ap '15  
 Studying the textile labeling bills. *Textile World* 48:371 Ja '15

#### Tables, calculations, etc.

Straight line textile calculations. S: S. Dale. *Textile World* 49:427-35, 514-18, 650-6; 50:89-94, 304-10 JI-N '15  
 Textile analysis and fabric value determination for cotton back satin. W: J. Schepp. *Textile World* 50:78-9 O '15

#### Testing

Quick method for testing the non-staining quality of textile oils. T: T. Gray. *Textile World* 49:568-9 Ag '15  
 Testing and properties of textile materials. *Textile World* 49:568-9 Ag '15  
 Testing U S Bur Stand Circ 41:1-26 '15  
 Testing textile materials. *Textile World* 48:556-7 Mr '15  
 Tests for tire fabrics. *Textile World* 49:562-4 Ag '15

**Textile law.** See **Textile industry and fabrics—Law**

#### Textile machinery

Automatic cloth feed for tentering machines. *Textile World* 49:374-5 Je '15  
 Cameron principle of cutting fabrics. *Textile World* 49:605-8 S '15  
 Cameron process for slitting and winding strips for surgeons' bandages and other purposes. *Textile World* 48:346-50 D '14  
 Cloth shearing machine. *Textile World* 50:117-18 O '15  
 Device for laying cloth. *Textile World* 49:113 Ap '15  
 Finishing of belting fabrics. *Textile World* 49:684-5 S '15  
 Fulling and washing mill for knit goods. *Textile World* 50:124-5 O '15  
 Haubold improved press for underwear and hosiery. *Textile World* 49:451-2 JI '15  
 Improved high pressure boiling jigger. *Textile World* 48:427-3 Ja '15  
 Machine for finishing fabrics. *Textile World* 49:463-5 JI '15  
 Machines for preparing absorbent cotton. *Textile World* 48:350-1 D '14  
 New flat seaming machine for knitted goods. *Textile World* 48:513-15 F '15  
 New Lancashire cloth winder. *Textile World* 48:439-43 Ja '15  
 Steaming and drying machine for textiles. *Textile World* 49:116-17 Ap '15  
*See also* Carding machinery; Cotton machinery; Dyeing machines; Knitting machinery; Looms; Silk machinery; Spinning and shrinking machine; Spoolers

#### Textile mills

Electric power in the textile industry. C. A. Chase. *Textile World* 48:540-50 Je '15  
 Electricity in textile mills. *Textile World* 48:540-50 Je '15  
 Northern man in the South. *Textile World* 49:73-4, 113-15 Ap, Je '15  
 Passementerie mill. *Textile World* 48:445-7 Ja '15  
 Problem of mill lighting. *Textile World* 50:81-5 O '15  
 Report of mill construction for 1914. *Textile World* 48:287-301 D '14  
 Static electricity in a textile mill. W: T. Estlick. *Textile World* 48:287-301 D '14  
*See also* Cotton mills; Knitting mills; Looms

#### Textile printing

Printing process for wool goods. *Textile World* 48:386-6 Ja '15

#### Textile schools

Are the textile schools doing all that should be expected of them? A. N. Sheldon. *Textile World* 49:624-6 S '15  
 List of the textile schools in the United States. *Textile World* 49:535 Ag '15

**Textile testing.** See **Textile industry and fabrics—Testing**

#### Thallium

Vapor pressure of thallium amalgams. J. H. Hildebrand and E. D. Eastman. *Am Chem Soc J* 37:2452-9 N '15

#### Thaumasite

Thaumasite a decomposition of anhydrite. *Sci Am* 111:609 D 19 '14

#### Thawing

Electric thawing. *Elec R & W Elec'n* 66:590-1 Mr '15  
 Hydrant-thawing apparatus. *Eng'g* 49:117-18 S '15  
 Pipe thawing. A. C. Kelm. *Elec W* 65:644-5 Mr '15  
 Pipe-thawing motor truck of the Columbus water-works. *Eng'g* N 73:80 Ja 7 '15  
 Thawing ground for trenching at Kalamazoo. A. Lenderink. *Eng'g* N 73:351-2 F 18 '15  
 Thawing methods at Fairbanks. H. I. Ellis. *Eng'g* & Min J 100:1-6 JI 3 '15  
 Thayer, Benjamin Bowditch, 1862-. Sketch. *por Eng'g* M 50:208-9 N '15

#### Theaters

American theater; its antecedents and characteristics. H. Tallant. *diags Brickb* 23:285-90; 24:17-22 D '14-Ja '15

Keeney theatre, Brooklyn, N. Y.; views. *Arch & Bldg* 47:140-2 Ap '15

Steel construction for the Schenley theater, Pittsburgh. C. N. Haggart. *diags Eng'g* N 73:658-9 Ap 8 '15

Theatre, from a fire prevention standpoint. E: R. Hardy. *Arch & Bldg* 46:435-6 N '14

*See also* Moving picture theaters

#### Designs and plans

Neighborhood playhouse, Grand street, New York, N. Y. *Brickb* 24: pl 58-60 Ap '15

Toy theatre, Dartmouth street, Boston. *Brickb* 24:pl 56-7 Ap '15

#### Heating and ventilation

Theater cooling, ventilation and heating. *Eng'g* plans *Metal Work* 83:225-7 F 5 '15

#### Lighting

Lighting of the Finsbury Park Empire. *Eng'g* 8:327 JI '15

Mobile color and stage lighting. B. Jones. *Eng'g* plan *Elec W* 66:248-9, 294-7, 346-9, 407-9, 454-6 JI 31-Ag 28 '15

#### Therapeutics

Therapeutic uses of preparations of the ductless glands. H. G. Torrey. *Sci Am S* 80:122-3, 134-5 Ag 21-28 '15

*See also* Anesthetics; First aid in illness and injury; Phototherapy; Radiotherapy

Thermal efficiency of the electric furnace. W. M. Johnson. *Eng Soc W Pa* 31:488-98; Discussion. 31:499-509 JI '15

#### Thermaphone

New telephone. *Sci Am* 113:87 JI 24 '15

Thermite welding. *See* **Welding**

#### Thermochemistry

Entropy of vaporization as a means of distinguishing normal liquids. J. H. Hildebrand. *Am Chem Soc J* 37:970-8 My '15

Heat of formation of solid solutions. H. W. Foote and B. Saxton. *Am Chem Soc J* 36:1704-8 Ag '14

Heat of neutralization of hydroxylamine and tetramethylammonium hydroxide. E. O. Ellington. *Am Chem Soc J* 37:699-709 Ap '15

Heat of vaporization of normal liquids. J. Kendall. *diags Am Chem Soc J* 36:1820-30 Ag '14

Heats of combustion of aromatic hydrocarbons and hexamethylene. T. W. Richards and F. Barry. *Am Chem Soc J* 37:998-1020 My '15

Mixed crystals of ammonium chloride with manganese chloride. H. W. Foote and B. Saxton. *Am Chem Soc J* 36:1695-1704 Ag '14

*See also* Boiling points; Combustion; Dissociation; Melting points; Specific heat; Temperature, High; Temperature, Low; Vapor density

#### Thermo-couples

Neglected phenomena in steel treatment. M. E. Leeds. *diags Iron Age* 96:80-2 JI 8 '15

**Thermo-couples—Continued**

Pyrometers for shop use. J. M. Johnson. *diag* Mach 21:550-3 Mr '15; Same. Sci Am S 80: 156-8 S 4 '15

See also Thermopiles

**Thermodynamics**

Determination of pressure variation in steam turbines and of dimensions of nozzles by means of the JS diagram; abstract. Schmoltke. Am Soc M E J 37:411-12 JI '15

Distribution of heat in the cylinder of a gas engine. A. H. Gibson and W. J. Walker. *diag* Engineer 119:550-1 Je 4 '15; Same cond. Power 41:824-5 Je 15 '15; Abstract. Am Soc M E J 37:417-18 JI '15

Earth considered as a heat engine. G. F. Becker. Sci Am S 79:391 Je 19 '15

Efficiency of heat engines. R. L. Wales. Power 42:17-18 JI 6 '15

Free energy of some carbon compounds. G. N. Lewis and M. Randall. Am Chem Soc J 37: 458-70 Mr '15

Heat-engine cycles. Power 41:173-5 F 2 '15

Is the organism a thermodynamic mechanism. J. Johnstone. Sci Am S 80:82-3, 106-7 Ag 7-14 '15

Properties of silver iodide interpreted in relation to recent thermodynamic conceptions. G. Jones and M. L. Hartmann. *diag* Am Chem Soc J 37:752-75 Ap '15

Steam-engine cycles. Power 41:210-11 F 9 '15

Theoretical efficiency of heat engines. F. G. Gasche. Power 41:753-4 Je 1 '15

Theoretical efficiency of heat engines. R. C. H. Heck. Power 41:534-6; 42:131 Ap 20, JI 27 '15

Thermal principles of the blast furnace. J. E. Johnson, Jr. Met & Chem Eng 13:718-20, 787-92, 833-40 O 15-N 15 '15

Thermodynamic paradox; abstract. A. F. Engel. Am Soc M E J 37:852 N '15

Thermodynamics of the marine oil engine. J. F. Wentworth. Power 41:148-8 Ja 26 '15

See also Heat engines; Steam; Steam engines

**Thermoelectricity**

Thermoelectric properties of carbon. W. C. Moore. Am Chem Soc J 37:2032-7 S '15

**Thermoelement. See Thermopiles****Thermometers and thermometry**

Brief history of the thermometer. W. S. Atchison. Power 41:575 Ap 27 '15

Emergent stem correction for thermometers in creosote oil distillation flasks. R. M. Wilhelm. *diag* U S Bur Stand Tech Pa 49:1-21 '15

Freezing point of benzene as a fixed point in thermometry. T. W. Richards and J. W. Shipley. Am Chem Soc J 36:1825-32 S '14

Measurements for the household. U S Bur Stand Circ 55:38-50 '15

New thermochemical method for subdividing accurately a given interval on the thermometer scale. T. W. Richards and T. Thorvaldson. Am Chem Soc J 37:81-6 Ja '15

Notes on thermometers. S. S. Rathbun. *diag* Power 42:509-10 O 12 '15

Thermometry of low temperatures. Sci Am 113: 265 S 25 '15

Wheatstone bridge for resistance thermometry. C. W. Waldner and others. *diag* U S Bur Stand Bul 11:571-80 My 27 '15

See also Calorimeters and calorimetry; Katathermometers; Pyrometers and pyrometry

**Thermophones**

Thermophones in Kensico dam. W. F. Smith. *diag* Engng 73:1172 D 10 '14

**Thermopiles**

Difficulty of measuring heat, with special reference to radiated and convected heat. A. H. Barker and F. C. S. Brendal. Heat & Ven 12: 33-4 Je '15

Thermoelement installations, especially for calorimetry. W. P. White. *diag* Am Chem Soc J 36:1856-68 S '14

Thermoelements of precision, especially for calorimetry. W. P. White. *diag* Am Chem Soc J 36:2292-318 N '14

Various modifications of thermopiles having a continuous absorbing surface. W. W. Coblenz, pls U S Bur Stand Bul 11:131-37 N 15 '14; Abstract. Elec W 64:1163-4 D 12 '14

See also Thermo-couples

**Thermoregulators. See Thermostats****Thermos bottles**

Continuous drop irrigation from a thermos bottle. *diag* Sci Am S 80:77 JI 31 '15

**Thermostats**

Alternating current thermoregulator. H. S. Davis. *diag* Am Chem Soc J 37:1520-1 Je '15

Lecture course on elements of heating. C. A. Fuller. *diag* Metal Work 84:212-13, 303-4 Ag 13, S 3 '15

Substitute for the twin-bulb trap in toluene-mercury thermoregulators. P. B. Davis. *diag* Am Chem Soc J 37:1198-9 My '15

Test of economy and efficiency of automatic temperature regulation. M. S. Cooley. Heat & Ven 12:46 My '15

Test of economy and efficiency of automatic temperature regulation in office buildings. F. A. Boos. *diag* Heat & Ven 12:54-9 Ap '15

**Thickeners. See Dorr thickener****Thinking machines**

Machine that remembers and forgets. W. H. Dearden. *diag* Sci Am 112:246 Mr 13 '15

Thinking machine, planning and theories. S. B. Russell. *diag* Sci Am 113:246+ S 18 '15

**Thiocyanates**

Researches on hydantions; the interaction of hippuric acid with thiocyanates. T. B. Johnson, A. J. Hill and B. H. Bailey. Am Chem Soc J 37:2406-16 O '15

**Thionyl chloride**

Action of thionyl chloride on sulfides. H. B. North and C. B. Conover. Am Chem Soc J 37:2486-90 N '15

**Third rails**

Attaching signal wires to third-rail. G. H. McKelway. *diag* Elec Ry J 45:1038 My 29 '15

Contact conductors and collectors for electric railways. C. J. Hixson. *diag* Am Inst E E Pro 34:1477-90 Ag '15

Contact rail installation in England. *diag* Elec Ry J 46:154-8 JI 24 '15

Discussion of contact systems for electric railroads. (See Proceedings for June and August, 1915) Am Inst E E Pro 34:3068-77 D '15

First 2400-volt third-rail line is built. *diag* Eng Rec 72:40-1 JI 10 '15

High-voltage third-rail construction. A. H. Tracy. *diag* Elec Ry J 45:469-70 Mr 6 '15

Michigan railway's 2400-volt, third-rail line. *diag* map Elec Ry J 45:1144-9 Je 19 '15; Abstract. Engng M 49:753 Ag '15

New heavy electric railroad opened in Michigan. *diag* Engng N 74:212-13 JI 29 '15

New patented third-rail insulator. *diag* Elec R & W Elec'n 66:1214 Je 26 '15

Protecting third rail. *diag* Elec R & W Elec'n 67:370-1 Ag 28 '15

Third rail and trolley system of the West Jersey and seashore railroad. J. V. B. Duer. *diag* Am Inst E E Pro 34:1237-53 Je '15; Abstract. Elec Ry J 46:58-9 JI 10 '15

Top contact unprotected conductor rail for 600 volt traction systems. C. H. Jones. *diag* Am Inst E E Pro 34:1283-93 Je '15; Abstract. Elec Ry J 46:55-6 JI 10 '15

**Thomson, Elihu, 1858-**

Elihu Thomson, father of electrical welding. *diag* Mach 21:444-5 F '15

Seventy years of inventions. Sci Am 112:518-19 Je 5 '15

**Thomson bridge**

Adjustments of the Thomson bridge in the measurement of very low resistances. F. Wenner and E. Weibel. U S Bur Stand Bul 11:65-8 N 15 '14

**Thorla**

Chemistry of the incandescent gas mantle. H. S. Miner. Met & Chem Eng 13:50-2 Je '15; Same. Am Gas Light J 102:65-6 F 1 '15; Same. Sci Am S 79:139 F 27 '15

**Thorium**

Monazite, thorium, and mesothorium. K. L. Kithil. *biblog* flow sheet U S Bur Mines Tech Pa 110:1-30 '15

**Thorium—Continued**

Thorium; an American industry—no danger of a shortage. T. Owens. *Am Gas Light J* 103: 187-8 S 20 '15

**Thorium oxalate**

Thorium ammonium oxalate. C. James, C. F. Whittemore and H. C. Holden. *Am Chem Soc J* 36:1853-8 S 14

**Thread cutting machines**

National-Acme stud and bolt threading machines. *Il Mach* 22:238-41 N '15; *Iron Age* 96: 976-8 O 28 '15

Thomson thread milling machines for shells and rifle barrels. *Il diag Mach* 22:237-8 N '15  
*See also* Pipe threading machines

**Thread guide**

Improved thread guide. *Il Textile World* 49: 331-2 Je '15

**Threading machines. See Thread cutting machines****Three-legged stiff frame with hinged column bases; with discussion. N. M. Stineman. W. Soc E J**

19:381-92 N '14  
hoop college of technology  
College of technology in the far West. *Sci Am* 113:90 J1 31 '15

**Thunderstorms**

Facts about thunderstorms. *Sci Am S* 80:37-8 J1 17 '15

Thunder; theories and experiments conducted in an endeavor to solve the problem. W. Schmidt. *Sci Am S* 79:175 Mr 13 '15

**Hurston, Robert Henry, 1889-1903**

Sketch. R. C. Carpenter. *por Sibley J* 29:323-30 Je '15

**Hury system. See Electric transmission****Hyroid gland**

Therapeutic uses of preparations of the ductless glands. R. G. Torrey. *Sci Am S* 80:122-3 Ag 21 '15

**Ibet****Commerce**

British India. *U S Sp Cons Rep* 72:561-72 '15

**Ticket offices. See Railroads—Ticket offices****ickets**

Suggestions for cards and tickets. *Inland Ptr* 54:800a-800h Mr '15

**Idea**

Tide analysis—a simple and inexpensive apparatus. E. W. Brown. *Sci Am S* 79:347 My 29 '15

**Ie plates. See Railroad tie plates****Ie-rods**

Tie-rods for floor arches. E. Godfrey. *Eng N* 73:692 Ap 8 '15

Tie-rods for floor arches; a criticism of current practice. F. N. Kneass. *diags Eng N* 73: 518-19 Mr 13 '15

Tie-rods in tile-arch floors. G. Aus. *Eng N* 73:743 Ap 15 '15

**Ies, Railroad. See Railroad ties****Ies, Steel. See Railroad ties, Steel****Ile, Concrete. See Concrete tile****Ile, Hollow. See Hollow tile****Iles**

Craft of tile-making and its relation to architecture. J. H. D. Allen. *Il Am Inst Arch J* 8:5-11 Ja '15

Decorative value of tile flooring. *Bldg Age* 37: 33-4 My '15

Ornamental tile in cornice work. *Il Bldg Age* 37:39-41 Je '15

*See also* Drain tile

**Imber**

Aeronautical timber; abstract. J. E. Huson. *Am Soc M E J* 37:712 D '15

Dry rot in factory timbers. F. J. Hoxie. *Eng Rec* 71:386-7 Mr 13 '15

Forest service proposes grading rule for southern yellow pine. *Eng Rec* 72:55-6 J1 10 '15

Longleaf pine distinguished visually from loblolly or shortleaf. A. Koehler. *Il Eng Rec* 72: 319-20 S 11 '15

Prevention of dry rot in mill buildings. F. J. Hoxie. *Il Eng Rec* 71:400-1 Mr 27 '15

Protecting wooden buildings from dry rot. *Eng N* 73:498 Mr 11 '15

Specifications for yellow-pine bridge and trestle timbers. *Ry Age* 59:37-8 J1 9 '15

*See also* Forests and forestry; Lumber; Mine timber; Pine; Redwood; Trees; Wood; Woodlots

**Timber preservation. See Wood preservation****Timber testing. See Wood—Testing****Timbered houses**

Old timbered houses: examples of old post and plaster work of the 15th and the 16th centuries which is seen at its best in England. *Il Bldg Age* 37:65-6 Ag '15

**Timbering**

Excavating and timbering the very deep trenches required in reservoir and other dam construction. J. M. M. Greig. *plans Eng & Contr* 44:176-8 S 8 '15

Lap-bolted crossbracing in wide and deep cut. *Il diag Eng N* 74:602 S 23 '15

*See also* Mine timbering; Subway timbering

**Timbering, Mine. See Mine timbering****Timbering, Subway. See Subway timbering****Time**

Time system of the United States. C. T. Higginbotham. *Sci Am S* 79:375 Je 12 '15

**Time, Geological. See Geological time****Time keeping**

Courtesy is timekeeping. N. Hutchings. *Iron Age* 96:581 S 9 '15

Efficiency system for road contractors. J. H. Hammond. *Eng & Contr* 43:552-4 Je 28 '15

Field and office methods employed by Louisville water co. in checking construction gang payrolls. G. D. Crain, Jr. *Eng & Contr* 43:102-3 F 3 '15

Importance of personal touch. N. Hutchings. *Iron Tr R* 57:761 O 14 '15

Timekeeping and cost records for way department. S. Gausmann. *Elec Ry J* 46:596-8 S 18 '15

Who should keep way department time? *Elec Ry J* 46:635-6 S 25 '15

**Time measurements**

Indicating and recording of time. *Sci Am S* 79: 299 My 8 '15

Time measured graphically. F. R. Honey. *Sci Am* 113:446 N 20 '15

**Time perception**

Motion picture magic; playing tricks on time. C. H. Claudy. *Il Sci Am* 112:454-5 My 15 '15

**Time signals**

Device for receiving wireless time signals. *Il diag Elec W* 65:318-19 Mr 27 '15

Records of radio time signals made with a physiological recorder. C. W. Waggoner. *Il Sci Am S* 79:152 Mr 6 '15

**Time study**

Applying scientific management. H. K. Hathaway. *Iron Tr R* 57:739-42+, 787-93 O 14-21 '15; Same. *Foundry* 43:440-4, 502-7+ N-D '15

Cost of loading bricks into a box car by means of a portable belt conveyor. A. C. Haskell. *diag Eng & Contr* 44:204 S 15 '15

Fixing standard time for a bonus system. Z. L. Potter. *Ry Age (Mech ed)* 89:192-3 Ap '15

Making instruction cards from time studies. D. V. Merrick. *Iron Age* 95:560-3 Mr 11 '15

Operating a foundry on a scientific basis. F. A. Parkhurst. *Il Foundry* 43:21-6, 53-8 Ja-F '15

Practical utilization of time study data. D. V. Merrick. *Ind Eng* 15:31-4 F '15

Results of a time study on steam-main construction. *Am Gas Light J* 103:13 J1 5 '15

Superintendents can save money by short time studies. A. C. Haskell. *Eng Rec* 71:841 Mr 13 '15

Time study on excavating and handling material. *Munic Eng* 49:77 Ag '15

Time study shows expensive defect in cement-handling methods. *Eng Rec* 72:460 O 9 '15

Use and abuse of time study studies. A. A. Dowd. *Iron Age* 95:300-3 F 4 '15

Utilization of time study data. R. T. Kent. *Iron Age* 95:1178-81 My 27 '15; Same. *Iron Tr R* 58:1109-13+ Je 3 '15; Same. *Ind Eng* 15:98-108 S '15

*See also* Task system

Timepieces. See Time measurements; Watches

# Tin

- Investigation of fusible tin boiler plugs. G: K. Burgess and P. D. Merica. *U S Bur Stand Tech Pa* 53:1-37 '15; Same cond. *J Ind & Eng Chem* 7:824-9 O '15; Abstracts. *Iron Age* 95:1403-4 Je 24 '15; *Am Gas Light J* 103:29-30 J1 12 '15; *Am Soc M E J* 37:854 N '15; *Power* 42:733-4 N 23 '15
- Pearce assay for tin. *Eng & Min J* 98:1142 D 26 '14
- Situation in tin. *Eng & Min J* 99:588 Mr 27 '15
- Tin production. *Metal Work* 83:936-7 Je 26 '15
- Tin production in the United States, 1914. *Eng & Min J* 99:66-8 Ja 9 '15
- Use of hydrofluoric acid in the separation of copper and lead from tin and antimony by means of the electric current. L. W. McCay. *Am Chem Soc J* 36:2375-81 N '14

# Tin metallurgy

- Attempt at tin concentration. J. Simmons. *Il Eng & Min J* 99:816-17 My 8 '15
- Tin-ore dressing at Llallagua, Bolivia. D. Copeland and S. E. Hollister. *Il Eng & Min J* 100:461-4, 513-15, 555-8 S 18-O 2 '15

# Tin mines and mining

- Hydro-electric plant at a Bolivian tin mine. M. R. Lamb. *Il Eng & Min J* 99:7-9 Ja 2 '15
- Prospecting for tin. *Eng & Min J* 99:295 F 6 '15
- Tin mining in Alaska. map *Eng & Min J* 100:338-9 N 20 '15
- Tin mining in Bolivia. M. G. F. Soehnlein. *Eng & Min J* 99:143-5 Ja 16 '15
- Tin mining in Bolivia. M. R. Lamb. *Eng & Min J* 99:605-6 Ap 3 '15
- Tin-ore dressing at Llallagua, Bolivia. D. Copeland and S. E. Hollister. *Il Eng & Min J* 100:461-4 S 18 '15
- Trip through Bolivia. S. C. Bullock. *Il Eng & Min J* 100:421-4 S 11 '15

# Tin plate

- How tin plate is made in Germany. Von W. Kramer. *diags Iron Tr R* 57:359-60 Ag 19 '15
- Metal, tin-plate and sheet prices for seventeen years. *Iron Age* 95:24-24a Ja 7 '15
- Sheet and tin-plate trades in 1914. B. E. V. Luty. *Iron Age* 95:10-11 Ja 7 '15

# Tinning

- Determining price for tinning utensils. *Metal Work* 84:651-4 N 19 '15
- Method of retinning copper ware. H. F. Munro. *Metal Work* 83:474 Mr 26 '15

Tintic mining district. See Geology—Utah

# Tire fabrics

- Tests for tire fabrics. *Il Textile World* 49:562-4 Ag '15

# Tire pumps

- Engine-driven tire pumps for 1915. *diags Automobile* 32:330-5 F 18 '15
- J. M. engine-driven tire pump. *Il Horseless Age* 35:571 Ap 28 '15
- Stewart pump supplies cool air. *Automobile* 33:303 Ag 15 '15
- Temperature variation of air from hand and power tire pumps. G. Adams. *Horseless Age* 36:177 Ag 15 '15
- Tire sustaining pump. *diag Horseless Age* 35:752 Je 2 '15

# Tires

- Annealing oven for tires. W. E. Grum-Grzimalo. *diags Iron Age* 94:1397 D 17 '14
- Danger of welding processes as applied to tires and wheels. M. D. Hayes. *Il Elec Ry J* 45:942-4 My 15 '15
- Electric heater for shrink fits. *Il Elec Ry J* 46:960-1 N 6 '15
- Sizes required of wheels and tires in heavy traffic for road protection. *Automobile* 32:1083 Je 17 '15
- Suggestions regarding the determination of the properties of steel. A. N. Mitinsky. *Am Inst Min E Bul* 104:1597-1705 Ag '15; Abstract. *Iron Age* 96:463-3 Ag 26 '15; Same cond. (Proportional limit is prime factor) *Iron Tr R* 57:1184-6 D 16 '15; Discussion. *Am Inst Min E Bul* 108:2481-95 D '15

# Tires (automobile)

- Bostonian argues for resiliency as the measure of tire efficiency. *Automobile* 33:16-18 J1 1 '15
- Carrying capacities and tire pressures. H. S. Quine. *Automobile* 33:427 S 3 '15

Clincher vs. straight side tires. C: E. Duryea.

Horseless Age 35:167 F 3 '15

Cord tire—its origin, development and construction. J: F. Palmer. *diags Automobile*

32:1020-2 Je 10 '15

Cord tires score in road racing. *Il Automobile*

33:366-7 Ag 26 '15

English tire advertisers hit at competitors.

Horseless Age 35:353 Mr 10 '15

Hard-base solid tires gain followers. *Il Auto-*

mobile 33:361-2 N 25 '15

Heating motor truck steel tires electrically.

Mach 22:5 S '15

Heavy duty truck tires. *Il Munic Eng* 49:158-9

O '15

High tire prices not to last long. *Horseless*

Age 34:305 Ag 26 '14

How to make tires last longer. *Horseless Age*

35:641 My 12 '15

Makers should base tire equipment on car

weight. C: B. Whittelsey. *Automobile* 32:38-9

Ja 7 '15

Measuring the hardness and elasticity of rub-

ber. *Il Sci Am* 113:286 S 1 '15

New tire for motor trucks. *diags Eng & Contr*

44:54 J1 21 '15

Pros and cons of tire inflation. C: B. Whittel-

sey. *Horseless Age* 35:61-2 Ja 13 '15

Resiliency no true gauge for tire efficiency and

efficiency no measure of needs. *Automobile*

32:1037-40 Je 10 '15

Size and inflation of pneumatic tires. P. W.

Litchfield. *Horseless Age* 35:805-6 Je 16 '15

S. A. E. advances. *Automobile* 31:1148-9 D 24

'14

Sponge rubber with nitrogen under tension

for filling tires. *Automobile* 32:393 Ja 3 '15

Tire makers enlarge plants and develop prod-

uct. *Il Automobile* 33:055-60 N 35 '15

Tire quantities demanded if air tires were dis-

carded. *diag Automobile* 32:810-11 My 6 '15

Tire sizes standard. *Automobile* 32:85 Ja 14 '15

Tires and tire sundries, rims and wheels at

the New York show. H. H. Brown. *diags*

*Horseless Age* 35:108-9 Ja 20 '15

See also Tire pumps

# Repair

A. C. A. tests tireseal and multiple rings.

*Automobile* 32:110-+ Ja 21 '15

How to splice inner tubes. *Automobile* 33:243

Ag 5 '15

Relation of tire repairing to the garage. M. E.

Faber. *Horseless Age* 35:640 My 12 '15

# Tireseal

A. C. A. makes two certified tests. *Horseless*

*Age* 35:122 Ja 20 '15

A. C. A. tests tireseal and multiple rings.

*Automobile* 32:110-+ Ja 21 '15

# Titanium

Effect of titanium alloys on steel. G: F. Com-

stock. *Il Iron Tr R* 57:351-5+ Ag 26 '15

Has titanium any influence on the properties

of steel? F. A. J. FitzGerald. *diags Met &*

*Chem Eng* 13:28-9 Ja '15; Same cond. *Iron*

*Age* 95:309 F 4 '15; Summary. *Elec Ry J* 45:

88 Ja 9 '15

How titanium-aluminum bronze is produced.

C. Vickers. *Il Foundry* 43:273-3 J1 '15

Slags from titaniferous ores. F. E. Bachman.

*diag Iron Tr R* 55:1040-2 D 3 '14

Titanium aluminum bronze. W. M. Corse and

C: Vickers. *Metal Ind n s* 13:190-1 My '15

Titanium-aluminum bronze castings. W. M.

Corse. *Met & Chem Eng* 13:511-12 Ag '15

Titanium and its effects on steel. G: F. Com-

stock. *Il J Ind & Eng Chem* 7:87-94 F '15;

Same cond. *Sci Am S* 80:327 N 20 '15

Titanium and titaniferous ores. P. H. Berg-

green. *Sibley J* 29:227-30 Ap '15

Volumetric estimation of titanium by means

of ferric chloride. T. E. Ball and G. M.

Smith. *Il Am Chem Soc J* 36:1833-43 S '14

# Titration. See Volumetric analysis

Titration (water measurement). See Water flow

Titusville, Pennsylvania

# Politics and government

Year of the commission-manager plan at

Titusville, Penn. L. O. Bradley. *Eng N* 73:

1155 D 10 '14

Toads. See Tree toads

- Tobacco**  
Detoxication of tobacco. *Sci Am* 112:101 Ja 30 '15  
Tobacco trade of the world. *U S Sp Cons Rep* 68:1-48 '15
- Toilet articles**  
British India. *U S Sp Cons Rep* 72:276-85 '15
- Toilet rooms**  
Home plant sets example in sanitation: plumbing equipment of the Trenton potteries co. *Il Metal Work* 82:749 D 4 '14  
Modern toilet rooms in public schools. J. Graham. plans *Dom Eng* 70:332-4, 402-5 Mr 13, 27 '15  
Plumbing in toilet of railway station. *Il plans Metal Work* 83:117-18 Ja 15 '15  
Saving space in sanitary plans. *Il plan Metal Work* 83:469-70 Mr 26 '15  
Toilet regulations for industrial establishments: report of committee. *Boston Soc C E J* 2:78-89 F '15; Same cond. (Sanitation in shops and factories) *Eng M* 49:100-1 Ap '15  
*See also* Bathrooms; Public comfort stations; Schoolhouses—Toilet rooms; Water closets
- Toledo, Ohio**  
**Wharves**  
Toledo coal dock built in record time. *Il plan Eng N* 74:520-2 S 9 '15
- Tolerances.** *See* Fitting (machinery)
- Toluene**  
Recovery of toluene from gas. *diags J Ind & Eng Chem* 7:438-9 My '15  
Toluene recovery plant at Beckton, England. plan *Am Gas Light J* 102:332 My 24 '15
- Toluides**  
Tolyl esters and toluidides of the nitro-sulfonic acids of *p*-xylene. R. C. Huston. *Am Chem Soc J* 37:2119-22 S '15
- Toluol**  
Dr. Rittman's gasoline process. *Sci Am* 112:248 Mr 13 '15  
Increased gasoline yield and toluol from petroleum. *Am Gas Light J* 102:156-7 Mr 8 '15  
Rittman process of cracking. C. H. Claudy. *Il Sci Am* 112:267 Mr 20 '15
- Tomatoes**  
Canned-tomato industry in Italy. J. A. Shriver. *U S Bur For & Dom Com* 93:1-23 '15  
Examination of tomato pulp. W. D. Bigelow and F. F. Fitzgerald. *J Ind & Eng Chem* 7:602-6 Jl '15  
Iron in tomatoes. C. A. Brautlecht and G. Crawford. *J Ind & Eng Chem* 6:1001-2 D '14
- Tonnage, Train.** *See* Railroads—Train load
- Tonopah mining companies**  
Tonopah in 1914. F. Bradshaw. *Eng & Min J* 99:154-5 Ja 16 '15
- Tool holders**  
Cutting tool holders. *Il Iron Age* 95:559 Mr 11 '15  
J. H. Williams & co.'s tool-holders. *Il Mach* 21:589-90 Mr '15  
Lathe tool holder with stellite cutter. *diag Iron Age* 96:979 O 28 '15  
Peerless drill and reamer holder. *Il Mach* 21:888-9 Je '15  
Rigid boring-tool system. *Il Elec W* 66:604-5 S 11 '15; *Metal Ind n s* 13:385 S '15; *Ry Age* (Mech ed) 89:595-6 N '15  
Turning tool-holders. J. Horner. *diags Mach* 21:955-61; 22:6-9 Ag-S '15
- Tool steel**  
Cause of high speed steel tool failures. G. J. Brunelle. *Ry Age* (Mech ed) 89:369-70 Jl '15  
Cobalt steel; material for accelerating machine tool speeds and output. *Sci Am S* 79:379 Je 12 '15  
Cutting tools. *Il Engineer* 119:275-7 Mr 19 '15  
Effect of chromium and tungsten upon the hardening and tempering of high-speed tool steel; abstracts, with discussion. C. A. Edwards and H. Kikkawa. *Engineer* 120:313-14 O 1 '15; *Iron Age* 96:1126-7 N 11 '15  
Factors in hardening tool steel: abstracts. J. A. Mathews and H. J. Stage. *Elec Ry J* 44:1249-50 D 5 '14; *Iron Age* 94:1340-4 D 10 '14; *Mach* 21:396-9 Ja '15; *Ind Eng* 15:58-9 F '15; *Ry Age* (Mech ed) 89:243-7 My '15; *Iron Tr R* 57:184-7+ Jl 23 '15; Abstract, with discussion. *Am Soc M E J* 37:141-7 Mr '15  
Failure and heat treatment of drill steel. S. V. Bergh. *Il diags Eng & Min J* 99:612-14 Ap 3 '15  
Failure of hollow drill-steel. T. E. Sturtevant. *Eng & Min J* 99:579 Mr 27 '15  
High speed tool steels. F. C. A. H. Lantsberry. *Il Iron Age* 96:238-41 J 29 '15; Abstract. *Am Soc M E J* 37:239 My '15  
Machine steel for small tools. O. D. Kinsey. *Il diags Ry Age* (Mech ed) 89:189-90 Ap '15  
Positive identification of tool steels. *Iron Age* 96:200 Jl 23 '15  
Progress in machine shop methods. E. R. Norris. *Il Iron Tr R* 57:679-82+ O 7 '15  
Running tool steel pinions with soft steel gears; abstract. E. S. Sawtelle. *Ind Eng* 14:467 D '14  
Structure of carbon tool steel. J. V. Emmons. *Il Iron Age* 95:842-3 Ap 15 '15  
Surface decarbonization of tool steel. J. V. Emmons. *Il Am Inst Min E Bul* 98:2233-48 S '14; Same cond. *Iron Tr R* 55:727+ O 15 '14; Same cond. *Iron Age* 94:1288-90 D 3 '14; Abstract. *Am Soc M E J* 38:0189-9 O '14; Abstract. *Ind Eng* 15:27-8 Ja '15; Discussion. *Am Inst Min E Bul* 100:790-4 Ap '15  
Testing tool steels; abstract. A. B. Field. *Am Soc M E J* 37:658 N '15  
Why tool steel prices have gone up. E. C. Kreutzberg. *Iron Tr R* 57:987 N 18 '15
- Tools**  
Brown & Sharpe machinists' small tools. *Il Mach* 21:769-80 My '15  
Care and use of the cabinet scraper. C. A. King. *diags Bldg Age* 37:37-8 Jl '15  
Illinois Central tool system; standardization and distribution include a central tool room with an accurate cost system. O. D. Kinsey. *Il Ry Age* (Mech ed) 89:361-4 Jl '15  
Machine steel for small tools. O. D. Kinsey. *Il diags Ry Age* (Mech ed) 89:189-90 Ap '15  
Safe hand tools. *Il Iron Tr R* 56:523-4 Mr 11 '15; Same. *Eng & Min J* 99:581-2 Mr 20 '15; Same. *Ind Eng* 15:19-20 Ja '15  
Taft-Peirce tool-room specialties. *Il Mach* 21:835-7 Je '15  
Tool equipment for maintenance of way forces. *Ry Age* 59:337-41 Ag 20 '15  
Up-keep of track tools. M. El Carroll. *Il Ry R* 57:341-3 S 11 '15  
*See also* Augers; Machine tools; Machinery; Railroads—Tools and implements; Saws; Square (instrument); Tool steel
- Tools, Machine.** *See* Machine tools
- Tools, Military.** *See* Military tools
- Tools, Pneumatic.** *See* Pneumatic tools
- Topographic maps**  
Topography of the bed-rock under Chicago. R. Peattie. maps *W Soc E J* 19:590-4 Je '14; Same cond. *Eng & Contr* 42:505-7 D 30 '14; Discussion. *W Soc E J* 19:594-611 Je '14
- Topographical drawing**  
Maps and map making. T. H. Holdich. *Sci Am S* 79:38-9 Ja 16 '15  
Plating topography to distorted scale (valuation board requirement). *Eng N* 73:123-4 Ja 21 '15  
Speeding up the plane table. R. T. Hancock. *Eng & Min J* 100:840-1 N 20 '15
- Topographical surveying**  
Cost of topography for irrigation works in British Columbia. B. P. Little. *Eng & Contr* 42:384-5 Ap 28 '15  
How the government makes surveys for local use. G. O. Smith. *Eng Rec* 71:632-3 My 29 '15  
Methods and cost survey of Trinity river, Texas. T. H. Jackson. *Eng & Contr* 44:271-3 O 6 '15  
Need of a city plan and of a city topographic map. J. W. Shirley. *Eng N* 73:281-2 F 11 '15  
Propriety of government surveys for local use. W. N. Brown. *Eng Rec* 72:86-8 Jl 17 '15  
Reasons for city topographic survey. H. C. Mitchell. *Eng N* 73:290-1 F 11 '15  
Topographic survey of the city of Dayton, Ohio. R. H. Randall. *Eng N* 74:942-3 N 11 '15  
Topographic surveys for logging operations. E. A. Marshall. *Il diag Eng N* 73:1112-15 Je 10 '15



Topography. See Topographical drawing

### Tops

How a top stands up. J. Swinburne. *Inst E E* J 53:349-50 Mr 1 '15; Same; with discussion. *Sci Am S* 80:197 S 25 '15

### Toronto, Ontario

#### Harbor

Harbor developments at Toronto, Ont. *Eng & Contr* 48:sup21 My 26 '15  
Toronto breakwater to curb 10-foot waves. *diags Eng Rec* 70:694-6 D 26 '14

#### Railroads

Grade crossing elimination in North Toronto, Ontario. *il diag plan Ry Age* 59:555-8 S 24 '15

#### Streets

Brick paving on steep grades. F. A. Churchill. *il Munic Eng* 48:103-8 F '15

### Torpedo boat berth

Concrete pile and cylinder foundations at Charleston. *il diag Eng N* 74:926-9 N 11 '15  
Torpedo-boat berth at the Charleston navy yard. *il plan Eng N* 74:872-3 N 4 '15

### Torpedo boat destroyers

Bids for new United States destroyers. *Int Marine Eng* 19:553 D '14  
Latest French destroyers. *il Int Marine Eng* 20:168-9 Ap '15  
Launch of the U. S. destroyer, Cushing. *il Int Marine Eng* 20:88 F '15  
Unprecedented accident to a torpedo-boat destroyer: the Aylin. *il Sci Am* 112:71 Ja 16 '15

### Torpedo boats

Superheated steam in torpedo-boat engines. W. H. Miller. *Sci Am* 113:33-4 J1 3 '15  
Turbine installation on torpedo boats of the new Spanish navy. *Int Marine Eng* 20:516 N '15

See also Torpedo boat destroyers

### Torpedo mines. See Mines, Submarine

### Torpedoes

Automobile torpedo. *diags Engineer* 120:77-9 J1 23 '15  
Automobile torpedo: its problems and their solution. *il diags Sci Am S* 80:152-4 S 4 '15  
Gyrostatic action. J. G. Gray. *diags Sci Am S* 79:188-9 Mr 20 '15  
Leon torpedo. *diag Engineer* 120:196-7 Ag 27 '15  
Loading and firing submarine torpedoes. *Sci Am* 112:493 My 29 '15  
Modern automobile torpedo. E. F. Chandler. *il Sci Am* 113:112-14+ Ag 7 '15  
Protection against torpedoes. *Engineer* 119:41-2 Ja 8 '15; Same. *Sci Am S* 79:107 F 18 '15  
Submarines and torpedoes. C. N. Hinkamp. *il plan Sci Am S* 80:136-8 Ag 28 '15; Same cond. *Engineer* 120:19 J1 2 '15; Same cond. *Eng N* 74:698-9 O 7 '15  
Torpedo attack from the air. *Sci Am* 111:523 D 26 '14

See also Mines, Submarine

### Torque

Mechanical effects of electrical short-circuits. S. H. Weaver. *Gen Elec R* 13:1066-74 N '15  
Torque characteristics of direct-current motors. A. M. Bennett. *diag Power* 42:748-52 N 30 '15

### Torres y Quevedo, Leonardo de

Torres and his remarkable automatic devices. *il diags Sci Am S* 80:296-8 N 6 '15

### Torsion

Angle of torsion. B. D. Pinkney. *diags Mach* 22:58 S '15  
Angle of torsion. W. B. Gilbert. *diag Mach* 21:381 Je '15

Torsional strengths of guy anchor rods. T. Croft. *diags Elec W* 65:1807-9 Je 19 '15

### Tourville (battleship)

New French battleship Tourville. M. K. Barnett. *il diag Sci Am* 113:45 J1 10 '15

### Towboats

Diesel motor tug Chickamauga. G. E. Nicholson. *il Int Marine Eng* 20:498-5 N '15  
Government towboat Warloto. plans *Int Marine Eng* 20:487-8 N '15

Sea-going steel tug, Bristol. *il plan diag Int Marine Eng* 20:78-9 F '15  
Western river steamers and barges. E. A. Burnside. *il plan Int Marine Eng* 20:478-87 N '15

### Towers

Church towers, steeples, and spires of Sir Christopher Wren. W. R. Phillips. *il Brickb* 24:186-9, 228-32 Ag-S '15  
Design and construction of the 435-ft. steel framed tower of Jewels at the Panama-Pacific international exposition. F. S. M. Harris. *il diags Eng & Contr* 43:47-54 Ja 20 '15; Same cond. *Eng N* 73:866-72 My 6 '15; Same cond. *Eng Rec* 71:112-16 Ja 23 '15  
Earthquake-proof tower. C. Derleth, Jr. *il Eng M* 49:927 S '15  
Reinforced-concrete cap of Perry memorial column. H. C. Baird. *diags Eng N* 74:154-5 J1 22 '15  
Sulphite-solution plant of reinforced concrete: four 99-foot towers 8.5 feet in diameter with a special tile lining. *il Eng Rec* 70:610 D 5 '14  
Towers for radio-telegraph stations. *il diags Engineer* 119:427-8 Ap 30 '15

### Towers, Holst. See Holst towers

### Towers, Portable

Portable tower for maintenance of street lamps. *diag Elec W* 66:144 J1 17 '15

### Towers, Steel

Clean-up work after erecting three 600-ft. radio towers. *Eng N* 74:28 J1 1 '15  
Foundations for high towers at Darien, C. Z. I. W. Dye. *il diag Eng N* 73:1178-9 Je 17 '15  
Foundations for transmission line towers and tower erection. J. A. Walls; J. B. Leeper; W. E. Mitchell; P. M. Downing; F. C. Connery. *diags pls Am Inst E E Pro* 34:1167-97, 1369-77 Je-J1 '15; Abstract. *Elec W* 66:8-10 J1 3 '15  
Method of erecting Marconi masts. L. H. Peebles. *il diag Eng N* 73:1132-4 Je 10 '15  
600-ft. self-supported radio towers at Darien, C. Z. I. W. Dye. *il diag Eng N* 73:1228-31 Je 24 '15  
Weakness in steel towers. B. Haskell. *Elec W* 66:204-5 Ja 23 '15

### Towers, Transmission

Construction of tower foundations; abstract. F. C. Connery. *diags Elec W* 66:136 J1 17 '15  
Design of transmission towers for the Cohoes hydroelectric plant analyzed. *diags plan Eng Rec* 71:877-8 My 29 '15  
Foundations for transmission line towers and tower erection. J. A. Walls; J. B. Leeper; W. E. Mitchell; P. M. Downing; F. C. Connery. *diags pls Am Inst E E Pro* 34:1167-97, 1369-77 Je-J1 '15; Abstracts. *Elec W* 66:8-10 J1 3 '15; *Eng N* 74:159-61 J1 23 '15; Discussion. *Am Inst E E Pro* 34:3117-26 D '15  
New Carqueinez Straits high-tension crossing. *il Eng N* 74:248-9 Ag 5 '15  
One boiler room instead of fifty: Cabin Creek plant of the Virginia power company. *il diags Elec W* 66:286-91 Ag 7 '15  
Plan to defeat rust on legs of transmission-line towers. *il Elec W* 66:1090 N 13 '15  
Steel-tower, transmission-line construction. A. B. Cudebec. *il Elec W* 66:127-23 J1 17 '15  
Tower foundations for the Cristobal-Balboa transmission line. I. W. Dye. *il diags Eng Soc W Pa* 30:973-90 Ja '15; Same. *Ry R* 56:728-31 My 29 '15; Same cond. *Eng & Contr* 44:817-20 O 20 '15  
Transmission towers of 3-in. pipe. *il diag Elec W* 66:574 S 11 '15  
Wooden river-crossing towers. *il diags Elec W* 66:586-7 S 11 '15  
See also Electric lines

### Towing

Electric towing at Panama. *il diag Elec Ry* J 45:285-7 Ja 30 '15  
Towing locomotives for the Panama canal. C. W. Larson. *il diag Gen Elec R* 18:101-17 F '15; Same cond. *Eng N* 73:145-7 Ja 28 '15; *Ry Age* 58:189-91 Ja 29 '15; *Elec R & W* *Elec'n* 66:187-91, 233-7 Ja 30-F 6 '15; *Elec W* 66:288-90 Ja 30 '15; *Eng Rec* 71:134-6 Ja 30 '15; *Ry R* 56:160-3 Ja 30 '15; *Sci Am S* 79:72-4 Ja 30 '15; *Eng M* 48:744-8 F '15; *Int Marine Eng* 20:181-2 Ap '15; *Engineer* 119:323-5 Ap 2 '15

- Track-clearance records.** See Railroads—Clearance
- Track inspection.** See Railroads—Track inspection
- Track scales**  
Foundation, construction and care of track scales. A. Malmstrom. Ry Age 58:269 F 12 '15  
Proposed rating system for track scales. A. M. Van Auken. Eng N 74:115 J1 15 '15
- Testing**  
Adjusting railroad track scales. H. L. Van Keuren. Ry Age 59:958-60 N 19 '15  
Relative merits of long and short wheel base scale-testing cars. C. A. Briggs. Il diags Ry R 57:197-201 Ag 14 '15
- Track stresses.** See Rails—Stresses
- Tracks**  
Plank track carries drag-line excavator half mile in 10 hours. diag Eng Rec 71:152 Ja 30 '15
- Tracks, Mine.** See Mine tracks
- Tracks, Railroad.** See Railroads—Track; Street railroads—Track
- Traction engines.** See Tractors
- Tractive effort**  
Diagram for determining percentage of maximum tractive effort. L. R. Pomeroy. Ry Age (Mech ed) 89:453-4 S '15  
See also Locomotives—Performance
- Tractors**  
American caterpillar traction engine. Engineer 120:255 S 10 '15  
Bull tractor. Il Munic J 89:237 Ag 12 '15  
Centiped tractor truck. Il Munic Eng 49:83 Ag '15  
Coming of the motor plough. Il diag Engineer 120:361-4, 408-10 O 15, 29 '15  
Creeping grip tractor. Il diags Engineer 119:560-3 Je 4 '15  
Demand for small tractors. Am Ind 16:39 O '15  
Farm tractor field widens. P. S. Rose. Automobile 38:752-3 O 21 '15  
Farm tractors and their motors. P. S. Rose. Horseless Age 35:799-800 Je 16 '15; Abstract. Eng M 49:750-2 Ag '15  
Four-wheel drive for motor tractors. Horseless Age 36:367-8 O 15 '15  
France to subsidize farm tractors. Il Automobile 33:644-5 O 7 '15  
General purpose gasoline tractor. Il Eng & Contr 42:187 Ag 12 '14  
Genesis of the traction engine. J. L. Mowry. Assn Eng Soc J 54:44-8 Ja '15  
Good tractor. Il Engineer 120:86-7 J1 16 '15  
Gray tractor. Il Munic J 89:377 S 2 '15  
Harvesting grain by motor power. Il Sci Am 112:612 Je 19 '15  
Interesting forms of farm truck-tractors. V: W. Page. Il diags Sci Am 113:344 O 16 '15  
Knox 10-ton tractor. Il diags Horseless Age 35:308-9 Mr 8 '15; Automobile 32:416-19 Mr 4 '15; Eng & Contr 43:232-3 Mr 10 '15; Eng N 73:504-6 Mr 11 '15  
Knox tractors doing heavy hauling. Il Eng & Contr 44:297 O 13 '15  
Light tractors for construction work. Il Eng N 73:79 Ja 14 '15  
Light tractors for industrial service. Il Eng N 73:1019 My 27 '15  
Long chances with the portable engine. L. Addy. Power 41:814-15 Je 15 '15  
Mercury freight house tractor truck. Il Ry Age 58:361-2 F 26 '15  
Operation analysis of new machines which cheapen the moving of earth on road work. A. B. McDaniel. Il Eng Rec 72:126-8 J1 31 '15  
Performance of a small gasoline tractor with caterpillar pilot-wheel. J. G. Bennett. Il Eng N 73:494-5 Mr 11 '15  
Powerful motor tractors. Sci Am 111:525 D 26 '14  
Progress in small farm tractors. L. W. Ellis. Il Sci Am 112:306-8 Ap 3 '15  
Road tractors. F. H. Trego. Horseless Age 35:797-8 Je 16 '15  
Royal agricultural show at Nottingham. Il Engineer 120:30-1 J1 9 '15  
Small caterpillar tractors for miscellaneous hauling. Il Eng N 72:1316 D 31 '14  
Small farm tractor. Sci Am 113:304 Ap 3 '15  
10,000 farmers at tractor test. Automobile 33:308 Ag 12 '15  
10-ton tractor for horse trucks. Il Iron Age 95:509 Mr 4 '15  
Theory of resistance to rolling of a hard body over a plastic surface; abstract. B. B. Schultz. Am Soc M E J 37:478-9 Ag '15  
Tractor truck for contractors' hauling. Il Eng & Contr 43:185 F 24 '15; Munic J 38:447-8 Ap 1 '15  
Universal tractor co.'s tractors. Il Horseless Age 34:386 D 16 '14  
Wide-spread use of the steam road locomotive in England. Il Sci Am 113:471 N 27 '15  
See also Electric tractors; Gas tractors
- Trade acceptances**  
Use of trade acceptances in business. E. F. DuBrul. Am Ind 16:25-7 N '15
- Trade agreements**  
United States commission on industrial relations makes report of progress. Iron Tr R 55:1100-1 D 10 '14  
See also Arbitration, Industrial
- Trade associations**  
Commercial organizations in the United Kingdom with a description of British manufacturers' and employers' organizations. A. J. Wolfe. U S Bur For & Dom Com 102:41-53 '15  
Man who wouldn't join. K. C. Cardwell. Dom Eng 69:332 D 12 '14  
Master mechanic and general contractor. E. B. Tonnesen. Metal Work 83:296-7 F 19 '15
- Trade catalogs.** See Catalogs
- Trade commission, Federal.** See United States—Federal trade commission
- Trade marks**  
British India. U S Sp Cons Rep 72:138-44 '15  
Cancellation of the ten-year clause. Sci Am 113:34 J1 24 '15  
Detroit's trade-mark contest. Sci Am 112:323 Ap 3 '15  
Register trade marks in Latin America. Automobile 33:411 S 2 '15  
Ruling affecting owners of trade marks. H: C. Thomson. Textile World 48:379 Ja '15
- Trade papers**  
Money and time saving recording systems; reading of trade journals and books. R. T. Gebler. Metal Work 84:300-2 S 3 '15  
News service of trade and technical press. W. H. Taylor. Metal Work 83:649 Ap 30 '15  
Profit from reading their trade paper. Il Metal Work 83:439+ Mr 19 '15  
Trade papers adopt standards of practice. Elec R & W Elec N 67:537 S 18 '15
- Trade schools**  
Machine design in a Rhode Island school. W. E. Freeland. Il diags Iron Age 96:1105-7 N 11 '15  
Teaching shop work. Mach 21:975 Ag '15  
Trade school idea at Gary, Ind. Il Bldg Age 37:25-8 S '15  
Training carpenters for the trade at Bridgeport. J. F. Johnson. Il Am Ind 15:26-8 Mr '15  
Vocational training in French cities. F. L. Glynn. Il Metal Work 83:760-1+ D 11 '14  
See also Corporation schools; Industrial education
- Trade unions**  
Commercial organizations in the United Kingdom with a description of British manufacturers' and employers' organizations. A. J. Wolfe. U S Bur For & Dom Com 102:37-53 '15  
Employer sustained in excluding union men. Ry Age 58:208 Ja 29 '15  
Legal decisions on mining questions: miners may legally join labor organizations. Colliery 35:396 F '15  
See also Arbitration, Industrial; Employers' associations; Labor and laboring classes; Open and closed shop; Picketing; Strikes; Trade agreements
- Trade waste**  
Determination of the biochemical oxygen demand by the saltpeter method in stockyards, tannery and corn products wastes. A. Lederer. J Ind & Eng Chem 7:514-16 Je '15

**Trade waste—Continued**

- Disposal of cannery wastes. D. Englis. Munic J 88:88-9 Ja 21 '15
- Experience gained in the treatment of the wastes from the scouring of wool. H. R. Crohurst and A. D. Weston. Eng & Contr 44:370-6 N 10 '15
- Liquid trade wastes. Sci Am S 80:51 J1 24 '15
- Maintenance of sewers and disposal works demands treatment of injurious trade wastes. W. L. Stevenson. Eng Rec 71:256-60 F 27 '15
- Processes available for the treatment of industrial wastes. Eng & Contr 43:363-5 Ap 21 '15
- Summary of the results of experiments on the purification of creamery refuse and their application. H. R. Crohurst and A. D. Weston. Eng & Contr 44:7-9 J1 7 '15
- Test plant operated to deodorize oil refinery wastes. F. R. Hesser. II diag Eng Rec 72:541-2 O 30 '15

**Trades schools. See Trade schools****Trading stamps**

- Trading stamps and premium legislation. E. J. Buckley. Metal Work 83:753 My 21 '15

**Traffic league, National Industrial. See National industrial traffic league****Traffic regulation. See Street traffic****Traffic signs**

- Semaphore type of street signal. diag Eng N 74:511 S 9 '15
- Street traffic signals, Cleveland, O. II Munic J 39:697 N 4 '15
- Traffic-control signal. II plan Eng N 74:320 Ag 12 '15
- Traffic signal for fire apparatus. Munic J 39:328 Ag 28 '15
- Traffic warning signs. H. M. White. II Munic J 38:658 My 13 '15
- Warning semaphore with light and horn for fire engines. Munic J 39:329 Ag 26 '15
- Traffic surveys. See Road traffic; Street railroads—Traffic; Street traffic
- Trailers. See Street cars—Trailers; Street railroads—Trailer operation

**Train dispatchers**

- Duties of a train despatcher. Ry Age 59:318 Ag 20 '15
- Train despatcher as a revenue solicitor. J. L. Coss. Ry Age 59:322 Ag 20 '15
- Train dispatchers' association of America 28th annual convention, St. Paul, Minn., June 15. Ry Age 59:16-17 J1 2 '15
- Train dispatching
- Automatic telephone system at the Kansas City terminal. II Ry R 55:768-70 D 26 '14
- Dead train orders. J. L. Coss. Ry Age 57:1122-3 D 18 '14
- Radio telegraphy and telephony for railroads. J. L. Hogan, Jr. II diag Elec W 66:570-2 S 11 '15
- Telephone train dispatching on the Cedar Rapids & Iowa City railway. II Elec Ry J 44:1309 D 12 '14
- Train despatcher—who has no grievance committee. W. E. Watts. Ry Age 58:217-18 F 5 '15

**Wireless telegraph and telephone on the D. L. & W. R. R. L. B. Foley. II Ry R 56:491-3 Ap 10 '15****Train ferries. See Car ferries****Train indicators**

- National train indicators at Kansas City. II Ry Age 58:272-3 F 12 '15
- Train indicators at Euston, London, station. II Ry Age 58:739 Ap 2 '15

**Train lighting. See Car lighting****Train load. See Railroads—Train load****Train resistance**

- Hump-yard calculations. C. C. Wentworth. Eng N 74:750 O 14 '15
- Rolling resistance of cars over switches and frogs. C. L. Eddy. Ry Age 58:796-8 Ap 9 '15
- Scientific train loading; tonnage rating. O. S. Beyer, Jr. Ry Age 59:507-11 S 17 '15; Same. Ry Age (Mech ed) 89:502-5 O '15; Same abr. Ry R 57:594-8 N 6 '15
- Starting resistance of electric cars. F. E. Wynne. Elec Ry J 46:401-2 S 4 '15

- Tests of car resistance. C. L. Eddy. Eng N 73:899-900 My 6 '15; Same. Sci Am S 80:111 Ag 14 '15
- Train resistance of electric cars at starting. D. D. Ewing. Elec Ry J 46:279-80, 637 Ag 14, S 25 '15

**Train sheds. See Railroads—Train sheds****Train staff. See Railroads—Signals****Trains. See Railroads—Trains****Trains, Hospital. See Hospital trains****Trainsheds. See Railroads—Train sheds****Trans-Siberian railway. See Siberian railway****Transit, Surveyors'**

- Horizontal cross-hair adjustment of the engineer's transit. M. F. Sayre. Eng N 73:396 F 25 '15
- New Smith solar attachment. A. D. Kidder. II Eng N 73:1068-70 Je 3 '15
- One-piece trussed transit standards. II Eng N 74:1056 N 25 '15

**Transmission of power. See Power transmission****Transportation**

- American engineer in China. W. B. Parsons. II map J Fr Inst 179:381-413 Ap '15; Abstract. Eng M 49:490-4 Je '15
- Economic elements involved in transportation and communication problems on country roads. Eng & Contr 43:528-9 Je 16 '15
- Railway and the automobile. T. C. Powell. Ry Age 59:804 O 29 '15
- Transportation in the fair grounds; intramural railway, auto trains, rolling chairs and moving platform at the Panama-Pacific international exposition. II Elec Ry J 46:764-5 Ap 17 '15
- Transportation on land and sea; the growth of the railway and the steamship. II Sci Am 112:623-6+ Je 5 '15
- See also Aeronautics; Automobiles; Commerce; Demurrage; Electric railroads; Express companies; Ferryboats; Freight car service; Freight handling; Haulage; Jinney buses; Mine haulage; Motor trucks; Motor vehicles; Pneumatic tubes; Ports; Railroads; River traffic; Shipping; Steamboats; Street railroads; Telferage; Terminals; Trucks; Vehicles; Waterways

**Transportation, Military**

- General locomotive. Sci Am 112:212 Mr 6 '15
- Mechanical traction in war. Sci Am S 78:407 D 26 '14

**See also Automobiles in war; Hospital trains; Motor trucks, Military; Motorcycles in war; Railroads in war****Transportation and car accounting officers, Association of. See Association of transportation and car accounting officers****Transportation exhibits. See Railroads—Exhibitions****Transvaal****See also Gold mines and mining—Transvaal****Transylvania (steamship)**

- Geared turbine Atlantic liner. plan (p. 435) Engineer 118:438 N 6 '14; Same cond. Eng M 48:605-6 Ja '15

**Traveling engineers' association**

- 23d annual convention, Chicago, Sept. 7-10. Ry Age 59:473-4, 505-18 S 10-17 '15
- 23d annual convention, Chicago, Sept. 7-10. Ry Age (Mech ed) 89:499-510 O '15
- 23d annual convention, Chicago, Sept. 7-10. Ry R 57:337-41, 360-2 S 11-13 '15

**Traverse tables**

- Aids to traverse computations. H. Andrews. Eng N 74:940-1 N 11 '15
- Computation of survey traverses. H. Andrews. Eng N 74:868-9 Ag 5 '15
- Do surveyors use traverse tables? Eng N 73:1038-9 My 27 '15
- More about traverse tables and survey computations. E. E. Thum. Eng N 74:124-5 J1 15 '15

**Tree planting**

- Fall planting. J. J. Levison. II Am For 21:861-5 Ag '15
- How to plant a shade tree and how to care for it the first few years. J. J. Levison. II diag Am For 21:992-6 O '15

**Tree planting—Continued**

- Planting time and care of trees. S. B. Detwiler. Am For 21:100-2 F '15  
 Selecting trees and shrubs. Am For 21:591-3 Ap '15  
 Successful example of tree planting. A. S. Baldwin. Il Ry Age 58:856 Ap 16 '15  
 320 miles of shade trees in Massachusetts. Am For 21:729 Je '15  
 Tree planting along the Lincoln highway. G. R. Nevitt. Am For 21:928-9 S '15  
*See also* Forest planting

**Tree surgery.** *See* Trees, Care of

**Tree toads**

- Rare amphibians at the New York zoological park. R. L. Ditmars. Il Sci Am S 80:196 S 25 '15

**Trees**

- American trees in German forests. J. S. Milck. Il Am For 21:922-7 S '15  
 Artificial production of vigorous trees. Sci Am S 79:150 Mr 6 '15  
 Baltimore ordinance governing city forester. Munic Eng 48:274-5 Ap '15  
 Bermuda's little trees. W. R. Brown. Il Am For 21:186-97 Mr '15  
 California tree novelties. E. A. Sterling. Il Am For 21:768-78, 853-60 J1-Ag '15  
 Cannon ball tree of tropical America. Il Sci Am S 79:92 F 6 '15  
 Chinese trees do well here. Il Am For 21:564-6 Ap '15  
 Effect of tarred roads upon trees. Sci Am 113:344 Ap 10 '15  
 Flushing's oldest tree. E. P. Martin. Il Am For 21:614-15 My '15  
 Hardwoods on the country estate. W. H. Miller. Il Am For 21:780-91 J1 '15  
 How a tree grows. B. Adams. Am For 21:935-6 S '15  
 Ornamental and shade trees. J. J. Levison. *See* monthly numbers of American forestry  
 Selecting shade trees. S. B. Detwiler. Am For 21:18-21 Ja '15  
 Sprout growth of trees. B. Adams. Il Am For 21:1058-61 N '15  
 Tree fruits and flowers. W. H. Miller. Il Am For 21:617-25 My '15  
*See also* Forests and forestry; Lumber; Timber; Tree planting; Woodlots; also names of trees, e. g. Chestnut, Cypress, Fir, Hemlock, Juniper, Pine, Tulip tree

**Diseases and pests**

- Ornamental and shade trees. J. J. Levison. Am For 21:797-801 J1 '15

**Trees, Care of**

- How to plant a shade tree and how to care for it the first few years. J. J. Levison. Il diags Am For 21:902-6 O '15  
 Planting time and care of trees. S. B. Detwiler. Am For 21:100-2 F '15  
 Taking the crook out of a tree. H. D. Lipincott; T. B. Meehan. Am For 21:1063-4 N '15

**Cost**

- Cost of caring for trees in Newark, N. J. Eng & Contr 43:88 Ja 27 '15

**Trenches**

- Adapted machinery and construction methods employed on new Western avenue sewer, Chicago—time studies. S. E. Bates. Il diags Eng & Contr 44:283-5 O 13 '15  
 Backfilling wagons, truck and shovel make record on sewer job. Il Eng Rec 72:521 O 23 '15  
 Cheap and effective backfilling with a road roller. B. A. Heinly. Il Eng N 73:941 My 18 '15  
 Cost of trench work through brick pavement for wire conduit. F. L. Shidler. Eng & Contr 43:504 Je 2 '15  
 Digging and filling trenches by machine. Il Sci Am 111:512 D 19 '14  
 Excavating and backfilling sewer trenches by machine. Eng Rec 71:20-1 Ja 2 '15  
 Excavating and timbering the very deep trenches required in reservoir and other dam construction. J. M. M. Greig. plans Eng & Contr 44:176-8 S 8 '15

- General utility trench filler. Il Munic Eng 49:85-6 Ag '15; Munic J 39:414 S 9 '15  
 New trenching machines. Il Eng N 74:448-9 S 2 '15  
 Power scraper for backfilling trenches. Il Eng & Contr 44:215-16 S 15 '15  
 Steam shovel digs 48-inch pipe trench in busy street. F. H. Pond. Il Eng Rec 71:693-4 My 29 '15  
 Track-trench excavating machine. Il Elec Ry J 46:74 J1 10 '15

**Trenches, Military.** *See* Intrenchments

**Trent agitators**

- Slime agitation and solution replacement methods at the West End mill, Tonopah, Nev. J. A. Carpenter. diags Am Inst Min E Bul 104:1639-51 Ag '15; Same. Met & Chem Eng 13:671-6 O 1 '15

**Trent river**

- Improvement of the river Trent. map Engineer 119:130-1 F 5 '15

**Trenton, New Jersey****Streets**

- Trenton's 1914 paving work. H. F. Harris. Il Munic J 38:279-80 Mr 4 '15

**Trephining**

- Prehistoric man and his early efforts to combat disease. T. W. Parry. Il Sci Am S 78:365-6 D 5 '14

**Trestles**

- Design, construction, operation and cost of a 2,534-ft. steel stocking trestle at the Negaunee mine, Negaunee, Mich. S. R. Elliott. Il Eng & Contr 44:171-3 S 1 '15  
 Permanent stockpile trestle of wood. O. Gustafson. Il diags Eng & Min J 98:1003-4 D 5 '14  
 Pile and timber trestle bridges. Ry Age 59:754-6 O 22 '15  
 Piledriver with traversing leads for driving trestle bents. Il diags Eng N 73:28-9 Ja 7 '15  
 Record reconstruction at Galveston. Il Elec Ry J 46:867 O 23 '15  
 Renewing trestle stringers without delay to traffic. S. C. Tanner. Il diags Ry Age 59:348 Ag 20 '15  
 Trestle building with easily moved pile driver. G. A. Eaton. Il Eng Rec 71:501 Ap 17 '15  
 Virgin country renders concrete pipe line construction difficult. B. Ehle. Il diags Eng Rec 72:507-10 O 23 '15  
*See also* Bridges

**Trestles, Concrete**

- Concrete trestles on Tennessee division second track, Illinois Central R. R. M. Johnson. Il Ry R 56:715-18 My 29 '15  
 Design of standard solid-deck reinforced concrete trestle in use on Illinois Central railroad. Eng & Contr 44:287-9 O 13 '15  
 Reinforced-concrete highway trestle. S. M. Cotten. diags Eng Rec 71:54 Ja 9 '15  
 Solid deck trestles and bridges on the Illinois Central. Il diags Ry Age 59:279-80 Ag 13 '15  
 Unit-construction system applied to a three-mile concrete viaduct to reduce the cost. Il diags plan Eng Rec 72:248-51 Ag 23 '15

**Trinitrotoluene**

- Trinitrotoluene in the war. Sci Am S 79:171 Mr 13 '15

**Trinity river, Texas**

- Levee construction on Trinity river. O. W. Finley. Eng & Contr 44:sup29-30 O 6 '15  
 Methods and cost survey of Trinity river, Texas. T. H. Jackson. Eng & Contr 44:271-3 O 6 '15

**Trioxymethylene**

- Action of trioxymethylene on *p*-xylene in the presence of aluminum chloride. R. C. Huston and D. T. Ewing. Am Chem Soc J 37:2394-9, 2401 O '15  
 Action of trioxymethylene on the various hydrocarbons in the presence of aluminum chloride. G. B. Frankforter and V. Kokatnur. Am Chem Soc J 37:2399-401 O '15

**Triphenylmethane**

- Temperature coefficients and the effects of acids, bases and salts in reaction velocities of the triphenylmethane dyes. H. C. Biddle and C. W. Porter. Am Chem Soc J 37:1571-89 Je '15

**Triphenylmethyl**

Triphenylmethyl; preparation of *p*-hydroxy-triphenylcarbinol and attempts to isolate the corresponding triarylmethyl. M. Gomberg and R. L. Jickling. *Am Chem Soc J* 37: 2575-91 N '15

Triphenylmethyl; the additive compounds of triphenylmethyl and some saturated hydrocarbons. M. Gomberg and C. S. Schoepfle. *Am Chem Soc J* 37:2589-74 N '15

**Trisection of angles**

Trisecting an angle mechanically. *Sci Am* 113: 271 S 25 '15

**Trolley lines. See Electric railroads****Trolley poles. See Poles, Concrete****Trolley wheels. See Electric railroads—Equipment and supplies****Trolley wire**

A. S. T. M. specifications for trolley wire. *Elec Ry J* 46:52-3 JI 10 '15

*See also* Electric railroads—Wiring

**Trolley-wire splicer**

Balanced trolley-wire splicer. *diag Elec Ry J* 46:919 O 30 '15

**Trolleys**

Electric crane trolley. *Il Ry Age* 58:708 Mr 26 '15

*See also* Electric railroads—Equipment

**Troy, New York****Bridges**

Center bearing, machinery and gates, Congress street swingbridge. *diags plan Eng N* 73:804-5 Ap 29 '15

Congress street bridge across the Hudson river at Troy; structural features. H: W. Hodge. *diags Eng N* 73:574-5 Mr 25 '15

**Troy, Pennsylvania****Sewerage**

Privately financed system of sewers. H: W. Taylor. *Eng Rec* 71:79-80 Ja 16 '15

**Trucks**

Methods of handling L. C. L. outbound freight. B. H. Lee. *Ry Age* 57:1181-4 D 25 '14

New type of factory lift truck. *Il Iron Age* 96: 363 Ag 12 '15

*See also* Car trucks; Electric trucks; Motor trucks

**Trusses**

Design and construction of roof and wall trusses. M. A. Howe. *diags Brickb* 24:55-8, 83-92, 119-24, 133-6, 175-8 Mr-JI '15

Design of beams, girders and trusses. E. McCullough. *diags Bldg Age* 36:27-8 JI; 33-4 Ag; 29-30 S; 37-9 O; 37-9 N; 27-9 D '14; 37: 39-41 Ja; 31-3 F; 27-8 Mr; 49-50 Ap; 49-50 My; 47-8 Je; 45-6 JI; 27-8 Ag; 29-30 S; 37-8 N; 51-2 D '15

Eccentric heel joint of roof truss; solution of problem. E: H. Rockwell. *Eng N* 74:798-8 O 21 '15

Erecting new trusses on a canal bridge and dam. W. R. Browne. *Il diags Eng N* 74:173-4 JI 22 '15

Gusset-plate diagram. W. M. Elliot. *Eng N* 73:940 My 13 '15

Heavy trusses and foundation girders used in steel bank building. *diags Eng Rec* 71:713-14 Je 5 '15

High stresses carried by heavy riveted truss. *Il diags Eng Rec* 72:159 Ag 7 '15

Moments at eccentric heel-joint of roof truss. C: W. Chassaing. *Eng N* 73:990 My 20 '15

Moments at eccentric heel-joint of roof truss. E: Godfrey. *Eng N* 74:399 Ag 26 '15

Problem in truss design. *Eng N* 73:592 Mr 25 '15

Safe construction of church roof trusses. E. McCullough. *diags Bldg Age* 37:59-61 Ja '15

Stresses in a rigid frame of two columns and a truss; with table. F. Freyhold. *Eng N* 73: 1031-3 My 27 '15

*See also* Bridges; Building; Girders; Strains and stresses

**Trust companies**

*See also* Railroads—Equipment trusts

**Trusts, Industrial**

Full text of decision in the United States district court for the district of New Jersey. *Iron Tr R* 56:1171-1218 Je 10 '15

German cartel policy. O: H. Luken. *Eng M* 48: 508-16 Ja '15

Government co-operation with our industries. *Sci Am* 112:99 Ja 30 '15

United States steel corporation wins its suit. *Iron Age* 95:1299-1301+ Je 10 '15

*See also* Clayton act; Public service corporations—Regulation

**Trypsin**

Comparison of methods for the determination of the proteolytic activity of pancreas preparations. J. H. Long and A. W. Barton. *Am Chem Soc J* 36:2151-66 O '14

**Tube milling**

Tube-mill tonnage calculation. N. Cunningham. *Met & Chem Eng* 13:22, 138 Ja, Mr '15

Tube-milling; closed circuit. W. J. Pentland. *Met & Chem Eng* 13:826-7 N 15 '15

Tube-milling for the flotation or oil-concentration process. W. B. Easton. *Met & Chem Eng* 13:89-90 F '15

Tube-milling in all-slime cyanide practice. W. J. Pentland. *Met & Chem Eng* 12:750-3; 13:204-5 D '14, Ap '15

Tube-milling tonnage calculation and notes on tube-milling. H. B. Lowden; A. H. Jones. *Met & Chem Eng* 13:70-2 F '15

Tube-milling tonnage calculation and notes on tube-milling. J. H. Haynes. *Met & Chem Eng* 13:10-12 Ja '15

*See also* Gold milling; Ore treatment

**Tube mills**

British Portland cement making machinery; shells for ball and tube mills. *Il Engineer* 120: 195-6 Ag 27 '15

Injector for tube-mill feed. N. Carless. *diag Met & Chem Eng* 13:889 Je '15

Manganese-steel castings in the mining industry. W. S. McKee. *Il diag Am Inst Min E Bul* 108:2402-6 D '15; Same. *Iron Tr R* 57: 1079-80 D 2 '15

Scoop discharges for tube-mills. W. R. Dowling. *Met & Chem Eng* 13:874 N 15 '15

Tube-mill end liners. J. F. Pyles. *Met & Chem Eng* 12:784-5 D '14

*See also* Crushing machinery; Hardinge mill

**Tuberculosis**

Artificial light treatment of surgical tuberculosis. *Sci Am S* 80:175-6 S 11 '15

Cost of health-seeking. *Sci Am* 112:78 Ja 23 '15

Phthisis conditions on the Rand. A. C. Key. *Eng & Min J* 99:28-9 Ja 2 '15

Pulmonary disease among miners in the Joplin district, Missouri and its relation to rock dust in the mines. A. J. Lanza and E. Higgins. *Il maps U S Bur Mines Tech Pa* 105:1-47 '15; Abstract. *Eng & Min J* 99:331-3 F '15

**Tuberculosis, Hospitals and sanatoriums for**

Chicago municipal tuberculosis sanitarium. C. A. Erikson. *Il plans Brickb* 24:267-72, pl 151-7 N '15

Cook county tuberculosis colony at Oak Forest, Ill. C. A. Erikson. *Il plans Brickb* 24:273-6, pl 158-60 N '15

**Tubes**

Drawing metal tubes of special section. C. L. Lucas. *Il diag Mach* 21:457-9 F '15

Drawing smaller sizes of brass tubing. *Il Iron Age* 95:661-3 Mr 25 '15

Seamless drawn steel tubes. *Power* 42:121 JI 27 '15

Simple physical tests for condenser tubes. H: A. Cozzens, jr. *Il Elec W* 66:442 S 18 '15

Small aluminum tubes. J. P. Sheehy. *Il diags Metal Ind n s* 18:55-6 F '15

Tube forming die. A. H. Wilson. *diags Mach* 21:666-7 Ap '15

Wrought iron and steel tubes. J. G. Stewart. *Power* 41:523-4 Ap 13 '15

*See also* Pipes

**Tubes, Boiler. See Boiler tubes****Tubular bridges. See Bridges, Tubular**

## Tucson, Arizona

## Lighting

Tucson's ornamental street-lighting system. 11 Elec R & W Elec'n 68:962-3 My 22 '15

## Tulip tree

Characteristics and seeding of the tulip tree. S. B. Elliott. 11 Am For 21:840-4 Ag '15  
Tulip or yellow poplar tree. 11 Am For 21:833-40 Ag '15

## Tumbling barrels

Traveling mill for cleaning scrap. 11 plan Iron Age 96:14-15 Jl 1 '15  
Tumbling barrel ("Jim Butler") work. T. C. Eichstaedt. Metal Ind n s 13:368-9 S '15

## Tungsten

Burmese tungsten. E. Maxwell-Lefroy. Engineer 120:320-1 O 1 '15  
Effect of chromium and tungsten upon the hardening and tempering of high speed tool steel; abstract with discussion. C. A. Edwards and H. Kikkawa. Iron Age 96:1126-7 N 11 '15  
Melting-point of tungsten. I. Langmuir. J Fr Inst 180:490-2 O '15

Production of tungsten and molybdenum in England. J Ind & Eng Chem 7:719 Ag '15  
Separation of tungsten from molybdenum. E. H. Marbaker. Am Chem Soc J 37:86-95 Ja '15

Tungsten in the British empire. Eng & Min J 100:50-1 Jl 10 '15

Tungsten ores in 1914. Eng & Min J 99:229-30 Ja 30 '15

Tungsten—the hardener. J. E. Schipper. 11 Automobile 32:351-4 F 25 '15

Tungsten lamps. See Electric lamps, Tungsten

## Tunnel design

Arched reinforced-concrete conduits designed by the theory of least work. W. M. Smith. Eng Rec 71:648-52 My 22 '15

Building a sewer tunnel of special concrete blocks reinforced. A. J. Latonnell. diags Eng N 74:127-8 Jl 15 '15

Construction of water works tunnels in the Metropolitan water district of Massachusetts. W. E. Foss. 11 diags Eng & Contr 42:451-3 N 11 '14

## Tunnel fires

Tunnel destroyed by fire on the Southern Pacific. 11 Ry Age 59:116-16 Jl 16 '15

## Tunnel lining

Belt conveyors will help simultaneous driving and lining of air tunnel. G. D. Emerson. 11 diags map Eng Rec 72:218-19 Ag 21 '15

City tunnel of the Catskill aqueduct. W. E. Spear. Eng N 73:194-9 F 4 '15

Construction plant and methods employed in building a system of concrete block tunnel sewers at Edmonton, Alberta. diags Eng & Contr 43:361-3 Ap 21 '15

Determination of stresses in and design of cast iron lining for subaqueous tunnels. P. A. N. Seurot. diags Eng & Contr 43:90-2 F 3 '15

Large telescopic steel form for tunnel lining. 11 Eng & Contr 44:152 Ag 25 '15

Light steel lining plates as a substitute for timbering in tunneling. 11 Eng & Contr 44:97 Ag 4 '15

Lining a double track railway tunnel under traffic. R. Meacham. 11 diag Ry Age 59:968-8 N 19 '15; Same. Ry R 57:645-8 N 20 '15; Same. Eng & Contr 44:395-6 N 17 '15

Lining a railway tunnel by compressed air. 11 Eng N 74:1033 N 25 '15

Lining the Snoqualmie tunnel. diag Ry Age 58:152 Ja 22 '15

Lining tunnels on the new Lewistown-Great Falls line of the St. Paul. diag Ry Age 58:978-9 My 7 '15

Lining two 5-ft. tunnels by use of concrete atomizer. 11 Eng N 74:938-9 N 11 '15

Molding and casting large tunnel segments. L. J. Josten. 11 diags Foundry 43:366-9 S '15

Molding cast-iron tunnel linings. L. J. Josten. 11 Iron Age 95:716-19 Ap 1 '15

New intake tower and tunnel at the St. Louis water works. E. C. Davis. 11 Assn Eng Soc J 53:287-93 D '14; Excerpt (Lining the St. Louis water tunnel). Eng N 73:164-6 Ja 28 '15

Placing a concrete lining in the Sandy Ridge tunnel. 11 plan Ry Age 58:533-6 S 17 '15; Same. Ry R 57:327-32 S 11 '15; Same (Self-propelled compressed-air mixing plant) Eng Rec 72:353-5 S 18 '15

Pneumatic outfit delivers concrete 1300 feet to tunnel forms. 11 Eng Rec 71:246 F 30 '15

Records of operation in handling concrete with compressed air. 11 diag Concrete Cem 5:260-3 D '14

Tunnel lining by compressed air. 11 Ry Age 57:1143-4 D 18 '14

Tunnel waterproofing with cement-and-clay mortar. Eng N 73:781-2 Ap 15 '15

## Tunnel shields

Collapsed tunnel shield at Memphis rebuilt in bad ground. C. H. Hollingsworth. 11 diags Eng Rec 71:388-9 Mr 27 '15

East river tunnel shields. 11 diags Eng N 74:952-5 N 11 '15

Roof shield used for driving railroad tunnel in soft earth. 11 diags Eng Rec 71:273-3 F 27 '15; Same cond. Eng M 49:280-1 My '15

## Tunnel ventilation

Ventilating the Stampede tunnel of the North-eastern Pacific. 11 diags Ry Age 59:234-5 Ag 6 '15

Ventilation of Allegheny Summit tunnel: successful installation of Virginian railway at one portal of a 5176-ft. bore for the most part of a 1.22-per cent grade. F. F. Harrington. 11 diags Eng Rec 70:324-5 S 19 '14; Same. Gen Elec R 17:1182-5 D '14; Same. Ry R 55:741-3 D 19 '14

See also Subways—Ventilation

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## Tunnels and tunneling

Absolute dependability of central-station power. 11 Elec W 65:1256-6 My 15 '15

Belt conveyors will help simultaneous driving and lining of air tunnel. G. D. Emerson. 11 diags map Eng Rec 72:218-19 Ag 21 '15

Bottom heading successful at Snoqualmie tunnel. diags Eng Rec 71:193 F 13 '15

Building invert of Milwaukee intake tunnel. L. G. Warren. diags Eng N 74:892-3 N 4 '15

Calculations showing economy of constructing the Rogers Pass tunnel. J. G. Sullivan. diags Eng & Contr 44:398-400 N 17 '15

Canvas air duct in tunneling. Eng N 74:177-8 Jl 22 '15

Catskill aqueduct tunneling. 11 diag Munic J 38:728-9 My 27 '15

City tunnel of the Catskill aqueduct. W. E. Spear. diags plan Eng N 73:56-60, 98-103, 148-53, 194-9 Ja 14-F 4 '15; Excerpt. Eng M 48:898-900 Mr '15

Collapsed tunnel shield at Memphis rebuilt in bad ground. C. H. Hollingsworth. 11 diags Eng Rec 71:388-9 Mr 27 '15

Completing the Mount Royal tunnel into Montreal. 11 diags plan Ry Age 59:357-60 N 5 '15

Completion of a long tunnel in France. Eng N 74:91-2 Jl 8 '15

Constructing rock tunnel of 50-ft. clear width. Stockton st., San Francisco. E. G. Tilton. 11 diags plan Eng & Contr 43:98-6 F 3 '15

Construction features on the Paasale valley sewer. 11 diags Munic J 38:59-62 Ja 21 '15

Construction of Mile Rock tunnel, San Francisco. 11 Munic Eng 48:311-13 Mr '15

Construction plant and methods employed on new water works intake tunnel at Milwaukee. 11 diags plan Eng & Contr 43:352-5, 371-2 Ap 21-28 '15

Construction progress on the Twin Peaks tunnel. A. J. Cleary. 11 diags Eng N 74:869-71 N 4 '15

Construction work on Twin Peaks tunnel, San Francisco. 11 Eng N 73:1087 My 27 '15

Contractor's methods and plant at the Kennardell tunnel of the Pennsylvania R. R. Eng N 73:635-6 Ap 1 '15

Deep tunnel completed in unsound rock solidified by extraordinary grouting. 11 Eng Rec 72:417-19 O 3 '15

Details of record tunneling at Rogers' Pass. Eng Rec 71:27-8 Ja 2 '15

Driving a five-mile tunnel through the Selkirks. 11 diags map Ry Age 57:1082-4 D 11 '14

Driving and lining carried on simultaneously at Snoqualmie tunnel saved timbering. R. W. Rae. diags Eng Rec 72:44-6 Jl 10 '15

**Tunnels and tunneling—Continued**

- Driving the Sheep Creek tunnel. diags Eng & Min J 98:893-8 O 17 '14; Same cond. Eng & Contr 43:152-4 F 17 '15
- Driving the tunnel for the Marseilles-Rhone canal. R. F. Wagner. diag Eng N 74:803-4 O 21 '15
- Earth tunnel for pipe sewer at Virginia, Minn. II Eng N 73:351 F 18 '15
- Economic comparison of European and American methods of driving tunnel heading. E. Lauchli. diags Eng & Contr 44:111-13 N 24 '15
- Grouting equipment for city tunnel, Catskill aqueduct. W. E. Spear. diags Eng N 73:884 My 6 '15
- Important realignment problem on the Pennsylvania. II map Ry Age 59:456-8 S 10 '15
- Largest tunnel in the world. E. L. Corthell. diags map Eng N 74:336-7 Ag 26 '15; Abstract. Eng & Min J 100:800 N 13 '15
- Methods and instruments used in making precise surface and underground surveys for the Canadian Northern Ry. tunnel, Montreal, Canada. J. L. Busfield. II diags plan Eng & Contr 42:383-6 O 21 '14
- Methods used in building the Rogers Pass tunnel. diags Eng N 74:920-3 N 11 '15; Excerpt. Eng & Min J 100:957-8 D 11 '15
- Mile-long highway tunnel in Pittsburgh, Penn. diags Eng N 74:300 Ag 12 '15
- Modern methods in railway tunnel construction. C. S. Churchill. diags Ry R 57:547-55 O 30 '15
- New American tunneling record at Rogers' Pass. Eng Rec 70:859 D 19 '14
- New methods of pneumatic tunneling aid safe and rapid completion of Passaic valley sewer contract. II diags Eng Rec 71:130-8 Ja 30 '15
- New York rapid transit railway extensions. F. Lavis. II diags Eng N 72:1206-10 D 17 '14
- New York subway tapped for new connections while carrying heavy traffic. II diags plan Eng Rec 72:255-7 Ag 28 '15
- Opening of the Mont d'Or tunnel. II map Engineer 119:505-6, 508 My 21 '15
- Piercing the Selkirk mountains for a five-mile tunnel. II map Eng Rec 70:604-6 D 5 '14; Same cond. Eng M 48:780-2 F '15
- Primer on explosives for metal miners and quarrymen. C. E. Munroe and C. Hall. diags pl U S Bur Mines Bul 80:72-93 '15
- Progress on Summit cut-off of the Lackawanna. II diags Ry Age 58:238-9 F 5 '15
- Railroad building under and over the streets of New York. II map Sci Am 113:96-7+ J1 31 '15
- Rapid tunnel driving under the bonus system. J. R. McFarland. Eng N 74:405-6 Ag 26 '15; Same. Eng & Min J 100:517-18 S 25 '15
- Roof shield used for driving railroad tunnel in soft earth, Point Defiance, Tacoma. II diags Eng Rec 71:272-3 F 27 '15; Same cond. Eng M 49:280-1 My '15
- Roosevelt drainage tunnel, Cripple Creek, Colorado. T. H. Sheldon. II map Eng & Min J 100:545-9 O 2 '15
- Rove tunnel on the canal from Marseilles to the Rhone. Bourgougnon. diags Eng & Contr 43:538-7 Je 16 '15; Abstract (Largest tunnel in the world) Eng M 49:759 Ag '15
- Sewer tunnel in clay driven with simple equipment in eight weeks. Eng Rec 71:181 F 6 '15
- Snoqualmie tunnel; C. M. & St. P. Ry. diags Eng N 73:346-9 F 18 '15
- Special features in the new intake tunnel at Milwaukee, Wis. L. G. Warren. diags Eng N 73:686-7 Ap 8 '15
- Speed of tunnel timbering increased by using erection outlookers. diags Eng N 73:543 Mr 18 '15
- Stockton street tunnel and Twin Peaks tunnel in San Francisco. A. J. Cleary. II map Eng N 73:314-17 F 18 '15
- Tunnel driven under inclined railway with thin earth cover. R. A. Rney. II diags Eng Rec 72:365-6 S 18 '15
- Tunnel driving record on Passaic valley sewer. Munic J 38:506 Ap 15 '15
- Tunnel, 400 feet below existing bore, replaces short section of damaged Catskill siphon. II diags Eng Rec 71:514-16 Ap 24 '15
- Tunnel streets at San Francisco. T. A. Church. Munic J 38:767-8 Je 3 '15
- Two-mile street railway tunnel at San Francisco. Eng Rec 71:47-8 Ja 9 '15
- Will pioneer bore weaken Rogers Pass tunnel? E. Lauchli. Eng Rec 71:308 Mr 6 '15
- See also: Blasting; Excavation; Mining engineering; Subways; Tunnel design; Tunnel lining; Tunnel shields; Tunnel ventilation
- Tunnels and tunneling, Subaqueous**
- Astoria-Bronx gas tunnel. J. F. Springer. II Munic J 39:649-50 O 28 '15
- Astoria tunnel under the East river for gas distribution in New York city. J. V. Davies. II map Am Gas Light J 103:225-30, 244-7+ O 11-18 '15
- Chelsea Creek tunnel for Boston water main. W. B. Conant. II diags Munic J 38:387-90 Mr 25 '15
- Cleveland west side water-supply tunnel. II diags plan Eng N 73:4-8 Ja 7 '15
- Construction of water works tunnels in the Metropolitan water district of Massachusetts. W. E. Foss. II diags map Eng & Contr 42:84-9, 129-31, 352-5, 451-3 J1 22, Ag 5, O 14, N 11 '14
- Detail and fabrication of Harlem river tubes. T. Duckworth. II diags Eng Soc W Pa 31:538-60; Discussion. 31:560-83 O '15
- Determination of stresses in and design of cast iron lining for subaqueous tunnels. F. A. N. Seurot. diags Eng & Contr 43:90-2 F 3 '15
- East river tunnel shields. II diags Eng N 74:952-5 N 11 '15
- Economic value of the Detroit river tunnel. Sci Am 113:422 N 13 '15
- Flooding and recovery of the Astoria tunnel. H. Carpenter. II diags Eng N 74:673-8, 736-41 O 7-14 '15
- Great gas tunnel under the East river. J. F. Springer. II Sci Am 113:280-1 O 30 '15
- Harlem river four-track subway tunnel. O. Hoff. II diags map Eng Soc W Pa 31:517-37; Discussion. 31:571-83 O '15
- Important terminal improvement; Detroit river tunnel. II Sci Am S 80:308 N 13 '15
- Laying a 6-ft. pipe tunnel across the Milwaukee river. II diags Eng N 73:522-4 Mr 18 '15
- New York rapid transit railway extensions. F. Lavis. II diags Eng N 72:1250-4 D 24 '14
- New York tunnel power plants. II plans Eng N 74:700-1 O 7 '15
- Piledriving destroys a tunnel by clay pressure. II Eng N 74:404-5 Ag 26 '15
- Seventy years of civil engineering. II Sci Am 112:529+ Je 5 '15
- Starting six tubes for two new East river subway crossings in New York. II diags Eng Rec 71:810-12 Je 26 '15
- Water-pipe tunnel, Metropolitan water-works. B. Lawrence. II diags Eng N 73:1116-21 Je 10 '15
- Turbines**
- Design of scroll cases and intakes for single-runner turbines analyzed. A. G. Hillberg. diags Eng Rec 72:413-15, 442-4 O 2-9 '15
- Design of turbine draft tubes analyzed. A. G. Hillberg. Eng Rec 72:604-7, 630-1 N 13-20 '15
- Developments in modern water turbine practice. H. Zoelly. II diags Power 42:698-702 N 16 '15
- Hydraulic turbines for Great Falls power company. II Eng Rec 71:138 Je 5 '15
- Hydraulic turbines; wheels and pumps at the Panama-Pacific exposition. H. J. Kennedy. II Sci Am S 80:124-6 Ag 21 '15
- Improved hydraulic governor. II Eng Rec 71:883-4 Mr 20 '15
- Largest hydraulic motor. II Sci Am 113:153 Ag 21 '15
- One governor controls two waterwheels. II Eng Rec 71:372-3 Mr 20 '15
- Pelton turbines and their governors: abstract. F. Fréail. diags Am Soc M E J 37:44-5, 113-15 Ja-F '15
- Ten per cent efficiency increase follows change from double to single-runner turbine. II diags Eng Rec 71:365-7 Mr 20 '15
- Turbines of the Cedars (Quebec) hydro-electric plant. II diag Eng N 73:611-13 Ap 1 '15
- Water turbine characteristics. G. H. Bancroft. Eng Rec 71:45-7 Ja 9 '15
- Water turbines on the Borgne river plant: abstract. F. Fréail. diag Am Soc M E J 37:44-5 Ja '15

**Turbines—Continued**

Wicket gates the logical development for hydraulic turbine regulation. L. F. Moody. *diags Eng Rec 72:358-60 S 13 '15*  
 World's largest low-head turbines in operation. Cedars Rapids development. *Eng Rec 71:154 Ja 30 '15*

*See also* Gas turbines; Steam turbines; Water wheels

**Testing**

Arrangements for conducting tests on water turbines when installed. *diags Elec W 66:253-4 J1 31 '15*

Cylinder gates increase turbine efficiency; Holyoke tests. A. G. Hillberg. *Eng Rec 71:485 Ap 17 '15*

Diaphragm method for the measurement of water in open channels of uniform cross-section. C. R. Weldner. *biblog Wis U Bul Eng S 8:1-72 no 1 '14*; *Excerpts. Eng N 72:532-4 S 10 '14*; *Eng & Contr 42:414-15 O 23 '14*

Do cylinder gates increase turbine efficiency? H. B. Taylor. *Eng Rec 71:690-1 My 29 '15*

Electrical methods of testing hydraulic turbines; abstract. A. Strickler. *Am Soc M E J 37:285-6 My '15*

Means suggested for interpretation of water-turbine test data. L. F. Harza. *Eng Rec 72:542-4 O 30 '15*

New flume needed for waterwheel tests; canvass of opinions. *Eng Rec 71:379 Mr 20 '15*

Old wooden turbine tested. C. B. Stewart. *Eng N 74:687-8 O 7 '15*

Proposed government testing flume for hydraulic turbines not needed. H. B. Taylor. *Eng Rec 72:321-2 S 11 '15*

Salt solution test shows turbine efficiency of 93 per cent at Holtwood plant. *diags Eng Rec 71:358-60 Mr 20 '15*

Stream gaging by titration; comparative tests of new chemical and standard mechanical methods of gaging stream flow. *diag plan Eng & Contr 42:270-3 S 16 '14*

Tests of high-power high-speed water turbines. S. J. Zowski. *Eng Rec 70:689-90 D 26 '14*

**Turbines, Gas.** *See* Gas turbines

**Turbines, Steam.** *See* Steam turbines

**Turbo-blowers.** *See* Blowing engines

**Turbo-generator sets, Swiss.** *diags Engineer 119:179-82, 204-6 F 19-26 '15*

**Turkey**

Engineering prospects in Turkey. *Engineer 119:371-2, 395-6 Ap 16-23 '15*

**Army**

Military resources of Turkey. *Sci Am 111:458 D 5 '14*

**Industries and resources**

Minerals of Asiatic Turkey. *map Eng & Min J 100:715-17 O 30 '15*

**Navy**

Military resources of Turkey. *Sci Am 111:458-9+ D 5 '14*

**Turning**

Adjustable and multi-cutting turning tools. F. H. Mayoh. *diags Mach 21:302-3 D '14*

Amalgamated machinery corporation turning machine for rapid work. *Iron Tr R 57:895 N 4 '15*

Machine for rough turning shell blanks. *Iron Age 95:1402 Je 24 '15*

Special turning machine. *Iron Tr R 57:32 J1 1 '15*

Turning engine bolts. C. L. Dickert. *diags Ry Age (Mech ed) 89:193-4 Ap '15*

*See also* Lathes

**Turntables**

Ball-bearing turntable with latch. *diags Eng & Min J 99:577-8 Mr 27 '15*

Improved turntable for contractor's dump cars. *diag Eng N 73:988 My 20 '15*

Turntable aids road contractor in solving hauling problem. *Eng Rec 72:303 S 4 '15*

**Turpentine**

Composition of wood turpentine. M. Adams. *J Ind & Eng Chem 7:957-60 N '15*

Contributions of the chemist to the naval stores industry. J. E. Teeple. *J Ind & Eng Chem 7:931-2 N '15*  
 Naval stores industry. A. W. Schorger and H. S. Betts. *diags 11 pls maps U S Agric Bul 229:1-53 '15*

**Tweed**

Making of Scotch tweeds. T. Welsh. *Textile World 48:398-400, 501-3 Ja-F '15*

**Twilight sleep**

Twilight sleep in the light of day. *Sci Am S 79:112 F 13 '15*

**Twine**

Electricity in twine and rope mills. *Eng R & W Elec'n 67:561-4 S 25 '15*

Finishing jute twine. *diag Textile World 48:431-3 Ja '15*

**Two-family houses.** *See* Duplex houses

**Type**

Appropriateness. J. L. Frazier. *Inland Ptr 55:209-12 My '15*

Type-designs in imitation of engraved work. J. L. Frazier. *Inland Ptr 55:553-4 Je '15*

*See also* Printing; Typesetting

**Typesetting**

Correct spacing of body-matter. J. L. Frazier. *Inland Ptr 55:355-8 Je '15*

Use and misuse of special characters and letters. D. H. Howard. *Inland Ptr 56:40-2 O '15*

*See also* Advertisements; Printing

**Job work**

Contour. J. L. Frazier. *Inland Ptr 56:209-12 N '15*

Distribution of white space. J. L. Frazier. *Inland Ptr 56:355-8 D '15*

Forced arrangements. J. L. Frazier. *Inland Ptr 54:805-7 Mr '15*

Idea for the job. F. F. Turner. *Inland Ptr 55:465-7 J1 '15*

Job composition. J. L. Frazier. *See* monthly numbers of Inland printer

Lesson in spacing. J. L. Frazier. *Inland Ptr 56:353-4 D '15*

Make it readable. J. L. Frazier. *Inland Ptr 56:69-70, 213-14 O-N '15*

Order of display. J. L. Frazier. *Inland Ptr 54:517-19 Ja '15*

Points on paneling. J. L. Frazier. *Inland Ptr 55:645-6 Ag '15*

Running-head as an embellishment. J. L. Frazier. *Inland Ptr 55:735-7 S '15*

Styles of typography that have been discarded—and why. G. F. Farrar. *Inland Ptr 55:616-20 Ag '15*

**Typesetting machines**

Cost of machine composition. B. Daniels. *Inland Ptr 54:549-50 Ja '15*

Modern methods of composing type. *Sci Am S 80:321, 324-6 N 20 '15*

One-man typesetting and composing machine. *Inland Ptr 54:512 Ja '15*

*See also* Linotype

**Typewriters**

Developing a typewriter. J. Dangerfield. *Mach 21:579-80 Mr '15*

Largest typewriter in the world. *Sci Am 112:303 F 27 '15*

Seventy years of inventions. *Sci Am 112:512, 514 Je 5 '15*

**Typhoid fever**

Artificial immunity against typhoid fever. A. M. Jungmann. *Sci Am 113:184-5 Ag 23 '15*

Biochemical and engineering aspects of sanitary water supply. G. W. Fuller. *J Fr Inst 180:43-61 J1 '15*

Effect of filtration and sterilization on typhoid fever in Philadelphia. F. D. West. *Munic J 39:111-12 J1 22 '15*

Model of the typhus carrier. *Sci Am 112:497 My 29 '15*

Relations between the water supply and typhoid fever in Washington. D. C. J. Gaub. *Am Water Works Assn J 1:727-33 D '14*

Typhoid carriers. *Sci Am 112:428 My 8 '15*

Water-borne typhoid fever epidemic at Healdsburg. Cal. W. A. Sawyer. *Eng & Contr 44:179-80 S 8 '15*



**Typhoid fever—Continued.**

- Water borne typhoid in Sacramento, Cal.—interesting application of liquid chlorine. N. E. Williamson. Eng & Contr 44:314 O 20 '15  
 Water-supplies and health in Massachusetts. A. L. Gammage. Eng N 74:1077-9 D 2 '15  
 Water-supply and typhoid fever at Cumberland, Md. A. G. Fowler and M. J. Colton. II Eng N 73:969-70 My 20 '15

**Typhus fever**

- Germ of typhus fever. Sci Am 112:591 Je 12 '15  
 Typhus fever. Sci Am S 80:28 Jl 10 '15

**Typography. See Printing****Tyrannosaurus**

- Tyrannosaurus, a cretaceous carnivorous dinosaur. B. Brown. II Sci Am 113:322-3 O 9 '15

**Tyrosine**

- Researches on hydantoins; a new synthesis of o-tyrosine. T. B. Johnson and W. M. Scott. Am Chem Soc J 87:1846-56 Ag '15

## U

**Ultra-violet rays**

- Development of ultra-violet water disinfection. II diag Eng N 74:634-6 S 30 '15  
 Effect of ultra-violet rays on the eye. Sci Am 113:323 O 9 '15  
 Eff. on the eye of ultra-violet light. W. E. Burge. II diag Elec W 65:812-14 Ap 10 '15; Abstract. Sci Am S 80:345 N 27 '15  
 Mode of action of ultra-violet radiation in injuring the refracting media of the eye. W. E. Burge. J Fr Inst 180:477-8 O '15  
 More mysteries of ultra-violet light. L. K. Hirschberg. Sci Am 112:312-13 Ap 3 '15  
 Production and application of ultra-violet rays, particularly for water purification. M. von Recklinghausen. II diag Assn Eng Soc J 54:101-9 Mr '15  
 Purification of water by the ultra-violet rays. M. von Recklinghausen. II diag Am Water Works Assn J 1:565-84 S '14; Same. Sci Am S 79:10-12 Ja 2 '15; Discussion. Am Water Works Assn J 1:585-8 S '14  
 Sterilization of water by ultra-violet rays of the mercury-vapor quartz lamp. M. von Recklinghausen. diag Am Inst E E Pro 33:1049-62 Je '14; Same cond. Eng M 47:756-8 Ag '14; Abstract and discussion. Elec R & W Elec'n 65:33-4 Jl 4 '14; Discussion. Am Inst E E Pro 33:1908-12 D '14  
 Ultra-violet rays and their application for the sterilization of water. M. von Recklinghausen. II diag J Fr Inst 178:681-704 D '14  
 Ultra-violet rays from the oscillating spark. Elec R & W Elec'n 66:1055-6 Je 5 '15

**Ultramicroscope. See Microscope and microscopy****Ultraudion. See Audion****Una-flow engines. See Steam engines****Underfeed stokers. See Stokers, Mechanical****Underground roads. See Subways****Underground surveys**

- Method and cost of making a relocation survey of underground pipe lines. O. E. Carr. plans Eng & Contr 42:153-5 Ag 12 '14; Same cond. (Underground survey of Cincinnati). Eng Rec 71:38-40 Ja 9 '15

**Underground utility galleries. See Subways (conduits)****Underpinning. See Shoring and underpinning****Underwear**

- Finishing knit underwear. Textile World 49: 449-50, 541-4; 50:103-4 Jl-Ag, O '15  
 Merchandising of hosiery and underwear. C. C. Parlin. Textile World 49:sup265+ My '15  
 Production and costs in an underwear mill. Textile World 49:358-9 Je '15  
 Standard sizes for two-piece underwear. Textile World 48:610-11 Mr '15  
 See also Hosiery; Union suits

**Unemployed**

- Dayton's effort at solving the problem of the unemployed. H. C. Wight. Munic Eng 48: 198-9 Mr '15

Economic relation between the supply of skilled and intelligent workmen and unemployment of the masses. T. N. Carver. Am Soc M E J 37:379-80 My '15

Irregular employment; cost and causes. H. S. Dennison. Am Soc M E J 37:280-1 My '15

Report on winter unemployment. J. P. Newell, E. G. Hopson and others. Assn Eng Soc J 54:258-74 Je '15

Unemployment in twelve cities in the United States. Ry R 57:599 N 6 '15

Unemployment on railroads. Ry Age 58:214-15 F 5 '15

Unemployment resulting from railroad depression. Ry Age 58:31-2 Ja 1 '15

See also Labor exchanges

**Unexploded shells. See Shells, Unexploded****Unfair competition. See Competition, Unfair****Unicycles**

Gyroscopic, motor-driven unicycle. Sci Am 111: 490 D 12 '14

**Uniflow engines. See Steam engines****Uniform boiler law society, American. See American uniform boiler law society****Union label**

Union label unnecessary in municipal contracts. Am Ind 15:27 Ap '15

**Union Pacific railroad**

Statistics for 1914. map Ry Age 57:1169-71 D 25 '14

Wireless telegraph and wireless telephone on the Union Pacific R. R. II Ry R 55:587-91 N 14 '14; Abstract. Eng M 48:585-8 Ja '15

**Union suits**

Improved union suit. diag Textile World 48: 422-3; 49:273-4, 356-7 Ja, My-Je '15

**United shoe machinery co.**

Decision in the United shoe machinery case. Sci Am 112:322+ Ap 3 '15

Patents involved in shoe machinery decision. Elec W 65:325-6 Mr 27 '15

**United States****Agriculture, Department of**

Agricultural instruction for the millions. Sci Am 113:461 N 27 '15

**Army**

Medical reserve corps United States army. Sci Am S 80:235 O 9 '15

Troops to guard the coast. T. Blodgett. Sci Am 112:309 Ap 3 '15

United States an undefended treasure land. II Sci Am 112:118-20, 158-9+, 178-9, 198-9+ F 6-27 '15

War capacity of United States railways. R. Grimshaw. Sci Am 112:417+ My 1 '15

See also United States—Defenses; United States—Militia

**Board of mediation and conciliation**

Annual report. Ry Age 58:192-4 Ja 29 '15

Work of the Board of mediation and conciliation. Ry Age 58:175 Ja 29 '15

Year's work of the Federal board of mediation and conciliation. Ry R 55:774 D 26 '14

**Cabinet**

Railroad crisis: a way out [a railroad department with a cabinet officer]. R. Morris. Ry Age 58:748-4 Ap 2 '15

**Census**

Census bureau no inquisition. Iron Age 95:823 Ap 8 '15

**Coast and geodetic survey**

Address to graduating class, Stevens institute of technology. O. H. Tittmann. Stevens Ind 32:233-45 Jl '15

Coast and geodetic survey work in 1915. Eng N 73:988-9 My 20 '15

New ships needed for the Coast and geodetic survey. Int Marine Eng 20:2-3 Ja '15

**Commerce**

American opportunity for Russian business. D. L. Hough. map Iron Age 95:616-17 Mr 18 '15

Balance of trade in chemicals between the United States and Germany in 1913. J Ind & Eng Chem 6:1034-5 D '14

**United States—Commerce—Continued.**

Business questions considered by the Chamber of commerce of the United States. Iron Age 95:854-5 F 11 '15

Foreign and domestic commerce and business generally. J. A. Farrell. Eng Soc W Pa 31: 223-8 Mr '15

How Uncle Sam helps commerce. A. H. Baldwin. Iron Tr R 55:1281-2 D 31 '14

Opportunity for the engineer in China. F. A. Foster. Am Soc M E J 37:846 N '15

Pan-American trade—Argentina. A. M. Boggs. maps Am Ind 16:20-3 O '15

President's message: extracts. Ry R 55:718-19 D 12 '14

Why optimism? G. O. Smith. Colliery 35:392 F '15

*See also* Chamber of commerce of the United States of America; Chemical industries; European war—Commercial and financial aspects; Export trade; Interstate commerce; Interstate commerce commission; Panama canal—Commercial aspects; Railroads—United States; Shipping; Tariff—United States; United States—Commercial policy; United States—Federal trade commission; United States—Industries and resources; Waterways

**Commerce, Department of**  
Secretary Redfield and the textile industry. Textile World 43:286a-286c D '14

**Commercial policy**

Aniline dye situation. I. F. Stone. Met & Chem Eng 13:663-71 O 1 '15

Existing obstacles to the extension of our trade with Central and South America. M. Coster. Elec W 65:1158-9 My 8 '15

For America first. Iron Tr R 56:31-30 Ja 7 '15

*See also* Tariff—United States; United States—Federal trade commission

**Commission on industrial relations**

Causes of industrial unrest: summary of the preliminary report. Am Ind 15:14 Ja '15

Commission on industrial relations sits in Washington. Ry R 56:618-18 My 8 '15

Daniel Guggenheim's testimony. Eng & Min J 99:245-7 Ja 30 '15

Federal commission on industrial relations. W. Drew. Am Ind 15:17-18 Je '15

Report. Ry Age 59:433 S 3 '15

Report. W. Drew. Am Ind 15:15-17 Ja '15

Report of progress. Iron Tr R 55:1100-1 D 10 '14

**Congress**

Rural control of Congress. J. A. Emery. Am Ind 15:14-15 F '15

**Defenses**

Actual and theoretical ranges of the United States coast defense guns. Sci Am 112:472 My 22 '15

Coming program for army and navy. Iron Age 96:578-9 S 9 '15

Country's railroads and national defense: with discussion. G. D. Snyder. Ry Age 59:1017-18 N 26 '15; Abstract. Ry R 57:685-6 N 27 '15

Government plans large outlays for defense. Iron Age 96:249-50 J1 29 '15

National factor of safety, giving engineers instruction in military matters. W. R. King. Eng Rec 71:183 Ja 30 '15

National security commission. Sci Am 111:486 D 12 '14

Opposition to government defense plans. Iron Age 96:340-1 Ag 5 '15

Organizing industry for national defense. Eng Rec 72:589 N 13 '15

Our unpreparedness against military devastation. H. A. W. Wood. Sci Am S 80:148-9 S 4 '15

Peace insurance. Sci Am 112:212 Mr 6 '15

Peril of our military unpreparedness. Sci Am 113:74 J1 24 '15

President on national defense. Sci Am 113:442 N 20 '15

Proposed expenditures for five years for improving national defenses. Iron Age 96:1024 O 28 '15

Specialized experience of engineers and contractors vital to country's defense. G. Perrine. l Eng Rec 73:594-6 N 13 '15

United States an undefended treasure land. l Sci Am 112:118-20, 158-9+, 178-9, 198-9+ F 6-27 '15

*See also* United States—Army; United States—Militia; United States—Navy

**Engineer corps**

Examinations for commissions, corps of engineers. Eng N 74:513-14 S 9 '15

**Engraving and printing, Bureau of**

Comfort for workers in Washington's government buildings. D. A. Willey. l Sci Am S 78:373-4 D 12 '14

Electric wiring in a great government plant. E. C. Stanton. l plan Elec W 66:686-8, 744-6 S 25-O 2 '15

**Federal trade commission**

Clayton act—and other things. W. H. Taft. Am Ind 15:34-7 Je '15

Federal trade commission. J. E. Davies. Elec W 65:370-1 F 6 '15

Federal trade commission and the Clayton law. R. C. Butler and C. Lynde. Ry R 56: 442-3 Mr 27 '15

Federal trade commission at work. Am Ind 15: 13-16 J1 '15

Federal trade commission extending export inquiry. Elec W 66:1054 N 6 '15; Ry R 57:602 N 6 '15

Federal trade commission investigates the foreign market for American electrical goods. W. Fawcett. Elec R & W Elec'n 67:292-4 Ag 14 '15

Federal trade commission rules of practice. Am Ind 15:16-17 J1 '15

Federal trade commission to continue work of Bureau of corporations and to consider export combinations. Iron Age 95:649 Mr 18 '15

Federal trade commission to help American business. Elec W 66:158-4 J1 17 '15

Federal trade commissioners' power to invade large and small business houses in search of evidence. E. J. Buckley. Elec R & W Elec'n 66:525 Mr 20 '15; Same. Metal Work 83:169 Ja 22 '15

Federal trade relations commission. J. A. Emery. Am Ind 15:19-21 Je '15

History of the commission; its organization, powers and duties. J. A. Emery. Am Ind 15:7-10 Ap '15

Members of the Federal trade commission. Elec W 65:566 F 27 '15

Outline of powers and procedure. J. E. Davies. Am Ind 15:24-5 Mr '15

Progress of Federal trade commission work. Elec W 65:827 Mr 27 '15

Trade commission not to harass business. Iron Age 95:703-3 Mr 25 '15

What business asks of Trade commission. Iron Age 95:1293-4 Je 10 '15

What of the Federal trade commission act: steel manufacturers write of its possibilities. Iron Age 95:26-9 Ja 7 '15

What will trade commission do? S. E. Eldridge. Iron Tr R 56:388c F 18 '15

Foreign and domestic commerce, Bureau of

Dyestuffs and the Department of commerce. Textile World 50:147-9 N '15

**Geological survey**

Competition of the U. S. geological survey with private engineering practice. H. C. Mitchell. Eng N 73:902-3 My 6 '15

Competition of the U. S. government with private engineers. H. C. Mitchell; G. O. Smith. Eng N 73:789-90 Ap 23 '15

Propriety of government surveys for local use. W. N. Brown. Eng Rec 72:85-6 J1 17 '15

U. S. geological survey and the topographical survey of Cincinnati. H. S. Morse. Eng N 73:902 My 6 '15

Work of the U. S. Geological survey, 1913-14. Eng Rec 70:650 D 12 '14

**Government printing office**

Power plant of the government printing office. D. H. Tuck. diag plan Power 41:576-80 Ap 27 '15

## United States—Continued

## Industries and resources

- America and the import problem. R. V. Sawhill. Iron Tr R 56:2-8 Ja 7 '15
- Aspects of some chemical industries, in the United States, today. E. Gudeman. J Ind & Eng Chem 7:151-5 F '15
- Contributions of the chemist to American industries; symposium. J Ind & Eng Chem 7:273-304 Ap '15
- Contributions of the chemist to the industrial development of the United States—a record of achievement. B. C. Hesse. J Ind & Eng Chem 7:293-304 Ap '15; Same. Sci Am S 79:210-11, 234-5 Ap 3-10 '15; Abstract. Met & Chem Eng 13:287-8 My '15; Abstract and discussion. Textile World 49:53-5, 74-5+ Ap '15
- Contributions of the chemist to various American industries; symposium. Met & Chem Eng 13:283 My '15
- Developing our resources. G. O. Smith. Metal Work 83:533 Ap 9 '15
- Distribution of industrial opportunities. G. O. Smith. J Ind & Eng Chem 7:67-9 Ja '15
- Doing without Europe. Sci Am 112:128, 157+, 176, 223 F 6-20, Mr 6 '15
- Domestic supply of wool and dyestuffs. C. E. Wry. Textile World 49:95-6 Ap '15
- Effect of the war on American industries. E. E. Pratt. Sci Am 113:203, 230-1 S 4-11 '15
- Features of engineering in the West. H. F. Stratton. Il maps Sibley J 29:139-49 F '15
- Government co-operation with our industries. Sci Am 112:89 Ja 30 '15
- How to break up a bad habit; what industrial independence really means. D. Wells. Iron Tr R 56:429 F 25 '15
- Industrial resources and opportunities of the Northwest. H. K. Benson. Met & Chem Eng 13:589-92 S 15 '15; Same. J Ind & Eng Chem 7:981-4 N '15
- Organizing industry for national defense. Eng Rec 72:589 N 13 '15
- Resources and possibilities of chemical industry in the Southwest. E. Baruch. Met & Chem Eng 13:604-8 S 15 '15
- Status of the chemical industries in the United States at the end of 1915. I. F. Stone. J Ind & Eng Chem 7:991-3 N '15; Same. Sci Am S 80:286-7 O 30 '15
- War orders and American industry. Eng M 49:481-3 Jl '15
- See also* Agriculture—United States; Chemical industries; Dye industry; Electric industries—United States; Forests and forestry—United States; Mines and mineral resources—United States; United States—Commerce; Water power—United States; also names of industries

## Insular possessions

- American Samoa. Sci Am 112:81 Ja 23 '15
- See also* Hawaiian islands; Philippine islands

## Labor, Department of

- Department of labor to find workmen for manufacturers. Iron Age 95: 223 Ja 21 '15

## Lighthouse service

- See* Lighthouse service (United States)

## Manufactures

- Clearing house for manufacturers. G. H. Manlove. Iron Tr R 56:20+ Ja 7 '15
- For America first. Iron Tr R 56:21-30 Ja 7 '15

## Militia

- Mobilizing the engineer companies of the militia. D. A. Tomlinson. Il Eng Rec 72:314-15 S 11 '15
- Nationalization of the national guard. E. W. Duke. Il Sci Am 113:394-5+ N 6 '15
- Plan for increasing our military strength. J. R. Charlesworth. Sci Am 113:43 Jl 10 '15
- Volunteer engineer officers. Eng & Min J 100:796-7 N 13 '15
- What the national guard needs. W. W. Wright. Sci Am 112:492-3 My 29 '15

## Mines, Bureau of

- 4th annual report of the director of the U. S. Bureau of mines. M. L. Hamlin. J Ind & Eng Chem 7:69-70 Ja '15
- Government publicity methods. W. O. Snelling. Met & Chem Eng 13:272-3 My '15
- Report of the Bureau of mines. Sci Am S 79:35 Ja 16 '15
- United States mining statutes annotated. J. W. Thompson. U S Bur Mines Bul 94:pt 2, 916-30 '15

## Naval consulting board

- Bureau of invention and development. Sci Am 113:74 Jl 24 '15
- Developing naval inventions by a government bureau. Eng N 74:179-80 Jl 22 '15
- First meeting and first recommendation. Met & Chem Eng 13:708-9 O 15 '15
- First meeting, Washington, D. C., Oct. 6. Am Inst Min E Bul 108:xliv-xiv D '15
- First meeting, Washington, D. C., Oct. 6, 1915. Am Soc M E J 37:xxiii-iv N '15
- 2d meeting, New York city, Nov. 4. Am Soc M E J 37:xvii-xviii D '15
- Membership of the Naval advisory board of inventions. Sci Am 113:276+ S 25 '15
- Naval advisory board. Elec W 66:620-1 S 13 '15
- Naval advisory board. T. Robins. Elec W 66:334-5 Ag 14 '15
- Naval advisory board may be enlarged. Elec W 66:313 Ag 7 '15
- Naval advisory board of inventions. pers Sci Am 113:801+, 326+ O 2-9 '15
- Naval consulting board personnel. Eng M 50:199-221 N '15
- Naval inventions board. Eng N 74:234-5 Jl 29 '15
- Navy advisory board of inventors. Elec W 66:173-4 Jl 24 '15
- Part of the civilian engineer in naval preparedness. F. J. Sprague. Eng M 50:169-72 N '15
- U. S. naval advisory board. Eng N 74:573-4 S 18 '15
- Well-known engineers named on Naval advisory board. Eng Rec 72:368 S 13 '15

## Navy

- Analysis of our naval standing. G. von L. Meyer. Il Sci Am 112:339-40, 359-60 Ap 10-17 '15
- Battle-cruiser. Sci Am 112:304 Ap 3 '15
- Building program; quoted from reports of Secretary Daniels and chiefs of bureaus. Engineer 119:311-12 Mr 28 '15
- Efficiency in conduct of office business; new methods in a naval bureau. Ry R 57:472-4 O 9 '15
- Engineering in the navy. W. L. R. Emmet. Gen Elec R 18:1097-8 D '15
- For peace and prosperity with a fighting navy to protect them. J. R. Dunlap. Eng M 50:161-8 N '15
- How the navy department is organized. Eng M 50:195-8 N '15
- Laboratory—not a navy yard. Sci Am 113:354 O 23 '15
- Laboratory's the thing. Sci Am 113:90 Jl 31 '15
- Naval research laboratory. F. J. Sprague. Sci Am 113:397 N 6 '15
- Naval review at New York. Sci Am 112:473 My 22 '15
- Navy for defense. Sci Am 113:4 Jl 3 '15
- Navy—our first line of defense. Il Sci Am 112:121-3; 113:266 F 6, S 25 '15
- Navy's most pressing need. Sci Am 113:38 Jl 10 '15
- Need of an enrolled naval reserve. Int Marine Eng 20:317-18 Jl '15
- Old navy and the new. W. M. McFarland. Int Marine Eng 20:174 Ap '15
- Organization of an engineering reserve for the navy. A. C. Meyers. Int Marine Eng 20:464 O '15
- Our naval development as related to national defense. J. R. Edwards. Eng M 50:173-94 N '15
- Plan for methodical increase of the navy. W. B. Chaifant. Sci Am 113:43 Jl 10 '15
- Rehabilitating the United States navy. Sci Am 113:374 O 30 '15
- Ships and navy for the Americas. W. L. Saunders. Eng M 50:172a-172d N '15

**United States—Navy—Continued**

- Standard marine electrical installations. H. A. Hornor. *Il diags Am Inst E E Pro* 34:1515-48 Ag '15  
 Target practice in our navy. *Sci Am* 113:58 JI 17 '15  
 To the Hon. Josephus Daniels, secretary of the navy. *Sci Am* 112:448 My 15 '15  
 Valor of ignorance; Mr. Kitchin's comparison of American and German navies. *Sci Am* 113:482 D 4 '15  
 We should build battle-cruisers. *Sci Am* 113:106 Ag 7 '15  
*See also* United States—Defenses; United States—Naval consulting board

**Patent office**

- Big handicap to industry. L. W. Moffett. *Il Iron Tr R* 56:557-60 Mr 18 '15  
 Evil of divided applications in the Patent office. F. Kelper. *Sci Am* 112:139 F 6 '15  
 Needed changes in the patent system. Met & Chem Eng 13:468-9 Ag '15  
 Patent office and invention since 1845. W. I. Wyman. *Sci Am* 112:533-4+ Je 5 '15  
 Report of the commissioner of patents. *Sci Am* 113:305+ F 27 '15  
 Rules of practice of the United States Patent office. M. Tibbets. *Sci Am* 113:467 N 27 '15  
 Suggestions regarding patent office practice. J. F. Robb. *Sci Am* 113:397 N 6 '15  
 Work and needs of the United States Patent office. T. Ewing. *Sci Am* 111:491 D 12 '14  
*See also* Patent laws and legislation

**Politics and government**

- How Uncle Sam helps commerce. A. H. Baldwin. *Iron Tr R* 55:1231-2 D 31 '14

- Printing and engraving, Bureau of  
 New building for the Bureau of engraving and printing. *Il diags Arch & Bldg* 45:463-70 D '14

**Public health service**

- U. S. public health service. H. P. Letton. *Munic J* 38:220 F 18 '15

**Public lands**

- See* Forest reserves; Public lands

**Public roads, Office of**

- Reorganization of the U. S. Office of public roads. *Good Roads n s* 9:144 Ap 8 '15

**Purchasing**

- How to sell tools to the government. L. W. Moffett. *Il Iron Tr R* 56:1101-5 Je 3 '15  
 Purchasing supplies for the Panama canal. F. C. Boggs. *Iron Age* 96:1180-2, 1226-7 N 18-25 '15

**Standards, Bureau of**

- Fees for electric, magnetic, and photometric testing. *U S Bur Stand Circ* 6:1-27 '14  
 National Bureau of standards and standards for public utilities. H. T. Wade. *Eng M* 49:240-51 My '15  
 Public utilities work of the Bureau of standards. *Elec W* 64:1187-8 D 19 '14  
 Recent researches in electricity at the Bureau of standards. E. B. Rosa. *Il plan J Fr Inst* 180:539-59 N '15  
 Relation of standards to the development of engineering. W. S. Stratton. *Am Soc M E J* 37:38-40 Ja '15  
 Report of the director of the Bureau of standards; excerpts. *Am Gas Light J* 102:108-9 F 15 '15; Same. *J Fr Inst* 179:216-23 F '15  
 U. S. Bureau of standards test weight car no. 2. *Il Ry R* 57:483-4 O 16 '15  
 What the National Bureau of standards is doing. E. B. Rosa. *Elec W* 66:527 S 4 '15

**State department**

- Handling correspondence at the United States Department of state. W. Fawcett. *Il Inland Ptr* 56:109-12 O '15

- United States smelting, refining & mining co. Report for 1914. *Eng & Min J* 99:823 My 8 '15

**United States steel corporation**

- Corporation exhibit at Frisco; model mines and steel plants. E. C. Kreutzberg. *Il Iron Tr R* 56:332-3+ F 11 '15

- Corporation wins forty-six awards. *Iron Tr R* 57:149 S 2 '15  
 Decision in the steel corporation case. *Eng & Min J* 99:1046 Je 12 '15  
 Exhibit of the United States steel corporation at the Panama-Pacific exposition, San Francisco; views. *Iron Tr R* 56:682a-682d Ap 1 '15  
 Films and models attract interest in exhibit at Panama-Pacific international exposition. *Il Iron Tr R* 57:402-3 Ag 26 '15  
 Full text of decision in the United States district court for the district of New Jersey. *Iron Tr R* 56:1171-1218 Je 10 '15  
 1914 report. *Iron Age* 95:679-81 Mr 25 '15  
 Report covering 1914. *Eng & Min J* 99:584-5 Mr 27 '15  
 Some features of the United States steel corporation's report for 1914. *Eng & Contr* 43:329-30 Ap 14 '15  
 Steel corporation at Panama-Pacific exposition. *Colliery* 35:389-90 F '15  
 Steel corporation wins government's dissolution suit. *Ry R* 56:769-70 Je 5 '15  
 United States steel corporation exhibit at the Panama-Pacific exposition. *Iron Age* 94:1425-6 D 17 '14  
 United States steel corporation wins its suit. *Iron Age* 95:1299-1801+ Je 10 '15

- United typothetae and Franklin clubs of America  
 Digest of the proceedings of the twenty-ninth annual convention. *Inland Ptr* 56:229-32 N '15

**Units**

- Photometric units. P. G. Nutting. *Elec W* 65:332-3, 645 F 6, Mr 13 '15

- Proposed unit of brightness. *Elec W* 65:715 Mr 20 '15

- Relation of the horse-power to the kilowatt. *Sci Am S* 79:162-3 Mr 13 '15

- Unit of brightness. H. E. Ives. *Elec W* 65:460 F 20 '15

- See also* Horsepower; Weights and measures

**Universal City, California**

- Strangest city in the world. *Il Sci Am* 112:385 Ap 17 '15

**Universal joint. See Joints****University extension**

- Methods of instruction in engineering extension; with discussion. K. G. Smith. *W Soc E J* 20:266-86 Mr '15

**Unloading. See Loading and unloading**

- Unseparable matter in greases. E. Twitchell. *J Ind & Eng Chem* 7:217-18 Mr '15

**Uranium**

- Estimation of uranium and phosphorus. H. D. Newton and J. L. Hughes. *Am Chem Soc J* 37:1711-13 JI '15

- Radium: uranium ratio in carnotites. S. C. Lind and C. F. Whittemore. *diags Am Chem Soc J* 36:2066-82 O '14

- Radium-uranium ratio in carnotites. S. C. Lind and C. F. Whittemore. *Il diags U S Bur Mines Tech Pa* 88:1-28 '15

**Urazoles**

- On 1-phenyl-4,5-dihydro-5-oxy-8-triazolylsulfonic acid and 1-phenyl-4,5-dihydro-5-oxy-3-triazolylmethylsulfone. E. W. Bissinger and S. F. Acree. *Am Chem Soc J* 37:183-9 Ja '15

**Urea**

- Comparative behavior of thiourea and urea towards acetic anhydride. E. F. Kohmann. *Am Chem Soc J* 37:2130-3 S '15

**Urease**

- Retention of activity by urease and by oxidase after exposure to the temperature of liquid air. J. S. Hepburn and C. B. Bazzoni. *biolog J Fr Inst* 180:603-5 N '15

- Studies on enzyme action; some experiments with castor bean urease. K. G. Falk and K. Sugura. *Am Chem Soc J* 36:2166-70 O '14

**Urinals**

- Local venting of plumbing fixtures. J. Graham. *diags Dom Eng* 71:152-3 My 8 '15

**Urine**

- Observations of the excretion of creatinine by women. M. Hull. *Am Chem Soc J* 36:2146-51 O '14

**Urine—Continued.**

- Urined, the cause of the characteristic odor of urine. W: M. Dehn and F. A. Hartman. *Am Chem Soc J* 36:2136-46 O '14
- Volatile substances of urine. W: M. Dehn and F. A. Hartman. *Am Chem Soc J* 36:2118-36 O '14

**Analysis**

- Nephelometric estimation of purine bases, including uric acid, in urine and blood. S. S. Graves and P. A. Kober. *Am Chem Soc J* 37:2430-47 O '15

**Urined**

- Urined, the cause of the characteristic odor of urine. W: M. Dehn and F. A. Hartman. *Am Chem Soc J* 36:2136-46 O '14

**Uruguay****Economic conditions**

- Financial developments in South American countries. W: H. Lough. *U S Bur For & Dom Com* 103:39-42 '15
- Uruguayan finance. *Am Ind* 16:42-3 N '15

**Industries and resources**

- Government electric power and telephone system in Uruguay. *Elec R & W Elec'n* 67:31 J1 3 '15

See also Mines and mineral resources—Uruguay

**Utah**

See also Geology—Utah; Mines and mineral resources—Utah

**Capitol**

- Utah state capitol. *Il Arch & Bldg* 47:324-30 S '15

**Industries and resources**

- Disseminated copper ores of Bingham Canyon, Utah. J. J. Beeson. *Il diags Am Inst Min E Bul* 107:2191-236 N '15

**Utah copper co., Bingham, Utah**

- Report for 1914. *Eng & Min J* 99:824-5 My 8 '15

- Report for the last quarter of 1914. *Eng & Min J* 99:408 F 27 '15

**Utilities bureau**

- Philadelphia valuation conference—some editorial views. *Eng Rec* 72:630-1 N 20 '15

- Valuation conference, Philadelphia, Nov. 10-12, 1915. *Eng N* 74:1002-3 N 18 '15; *Elec Ry J* 46:990-5, 1081-4 N 18-20 '15; *Elec R & W Elec'n* 67:939-41 N 20 '15; *Elec W* 66:1125-9 N 20 '15; *Eng Rec* 72:643-5 N 20 '15; *Munic J* 39:738-9 N 18 '15

**Utilities indemnity exchange**

- Reciprocal liability insurance for utilities and other electrical interests. *Elec R & W Elec'n* 66:1055 Je 5 '15

**Utility galleries. See Subways (conduits)****V****Vaccination**

- Artificial immunity against typhoid fever. A. M. Jungmann. *Il Sci Am* 115:184-5 Ag 28 '15

- Vaccine virus not the cause of tetanus. *Sci Am S* 80:155 S 4 '15

**Vacuum**

- Condensers for evaporating apparatus. E. W. Kerr. *diags Met & Chem Eng* 13:551-7 S 1 '15

- Effect of vacuum in steam turbines. G. G. Stoney. *Engineer* 118:521-3 N 27 '14; Same cond. *Sci Am S* 79:69 Ja 30 '15; Same cond. *Power* 41:312-16 Mr 2 '15; Discussion. *Engineer* 118:502-3 N 27 '14

- Getting the proper vacuum in summer. J. Wilmore. *diags Elec W* 66:358-63 Ag 14 '15

- Handy conversion table for low pressures. E. H. Peterson. *Power* 42:333 S 14 '15

- High vacuums with surface condenser. *Il Power* 42:338-9 S 7 '15

- Method of lifting oil for a gravity-feed system by use of condenser vacuum. A. Kuylenstierna. *diags Elec W* 66:1149 N 20 '15

- Most economical vacuum for turbines. W. H. Herschel. *Power* 41:744-7 Je 1 '15

**Popular misconceptions concerning condensers.**

- F. R. Low. *Power* 42:16-17 J1 6 '15
- Vacuum wrecks pipe line. *Il Metal Work* 84:217 Ag 13 '15

**Vacuum cleaning**

- Electrically driven vacuum sheet-cleaner for cylinder presses. *Il Elec R & W Elec'n* 66:176 Ja 23 '15

- Hotpoint electric vacuum cleaner. *Il Elec R & W Elec'n* 67:438 S 11 '15

- Perry aspirator for vacuum cleaning. *Il Dom Eng* 72:133 Ag 7 '15

- Use of the vacuum system for cleaning cars in San Francisco. F. W. Allen. *Il Elec Ry J* 46:516-17 S 18 '15

- Vacuum cleaner with adjustable nozzle. *Il Elec W* 66:994 O 30 '15

- Vacuum cleaning cars. E. J. Haines. *Il Elec Ry J* 46:323 Ag 21 '15

- Vacuum cleaning test in Hartford school building. *plan Heat & Ven* 12:61 Ag '15

**Vacuum pans**

- Classifications, principles, tests. E. W. Kerr, J. F. Gunther, and W. A. Rolston. *diags Met & Chem Eng* 13:485-92 Ag '15

**Vacuum pumps**

- Combined air compressor and vacuum pump. *Il diags Engineer* 119:143 F 5 '15

- Electrically operated vacuum pump by the Ingersoll-Rand co. *Il Elec W* 66:938 O 23 '15; *Elec R & W Elec'n* 67:777 O 23 '15; *Iron Age* 96:832 O 14 '15; *Met & Chem Eng* 13:769-70 O 15 '15; *Power* 42:711-12 N 23 '15; *Ry Age* (Mech ed) 89:594 N '15

- Electrically operated vacuum pump by the May-Nelson mfg. co. *Il diags Elec W* 66:1109-10 N 13 '15; *Elec R & W Elec'n* 67:1035 D 4 '15

- Unity cylinder ratio for dry-vacuum pumps. R. S. Howard. *Power* 42:337-8 S 7 '15

- Vacuum pump for vacuum heating and vacuum filtration systems. *Il Met & Chem Eng* 12:795-6 D '14

**Valence (chemistry)**

- Criticism of the electron conception of valence. R. F. Brunel. *Am Chem Soc J* 37:709-22 Ap '15

- Electron conception of valence: inorganic compounds. J. M. Nelson and K. G. Falk. *Am Chem Soc J* 37:274-86 F '15

- Electron conception of valence: the theory of electrolytic dissociation and chemical action. K. G. Falk and J. M. Nelson. *Am Chem Soc J* 37:1732-48 J1 '15

- Electronic conception of positive and negative valences. H. S. Fry. *Am Chem Soc J* 37:2368-73 O '15

- Interpretations of some stereochemical problems in terms of the electronic conception of positive and negative valences. H. S. Fry. *Am Chem Soc J* 37:855-92 Ap '15

- Theory of valency and molecular structure. W: C. Arsem. *diags Am Chem Soc J* 36:1655-75 Ag '14

- Valence of nitrogen in ammonium salts. W: A. Noyes and R. S. Potter. *Am Chem Soc J* 37:189-203 Ja '15

See also Substitution (chemistry)

**Valleys**

- Stream-valleys and their meaning. *Sci Am S* 80:256 O 16 '15

**Valparaiso, Indiana****Water supply**

- Water works of Valparaiso, Ind. E. L. Loomis. *Il Munic Eng* 49:9-12 J1 '15

**Valuation**

- Analysis of elements of cost of a complete plant unit. W. J. Huddle. *Eng & Contr* 44:139-40 Ag 25 '15

- Appraisalment of small electric properties. E. D. Dreyfus. *Elec R & W Elec'n* 66:433-8, 500-5 Mr 6-13 '15

- Engineer's idea of values is usually confused; Prof. John R. Common's views. *Eng & Contr* 43:284 Mr 31 '15

- Foundation principles of valuation. B. J. Arnold. *Elec Ry J* 46:713-19, 803-6 O 9-16 '15; Discussion. 46:732-3 O 9 '15

- Fundamentals of appraisal and valuation. M. E. Cooley. *Elec Ry J* 46:913 O 30 '15

## Valuation—Continued.

- Handy book-form data sheet for valuation work. R. E. Klotz. *Il Eng N* 74:794 O 21 '15  
 Kalamazoo situation. W: Newbigging. *Am Gas Light J* 103:38-9 JI 19 '15  
 Overhead charges in valuation. R: H. Tingley. *Ry Age* 53:1347-8 Je 11 '15  
 Pacific gas and electric company valuation methods. *Am Gas Light J* 102:179 Mr 22 '15  
 Philadelphia valuation conference—some editorial views. *Eng Rec* 72:620-1 N 20 '15  
 Reproduction basis of valuation criticised. J: M. Eshleman. *Eng Rec* 72:625-6 N 20 '15  
 Symposium on inventories and appraisals of properties. C. L. Cory; W. G. Vincent, jr.; W: J. Norton. *Am Inst E E Pro* 34:2131-58 S '15  
 Unique problem in valuation; inheritance tax appraisal of the Hales Bar hydro-electric plant. L: L. Tribus. *Eng N* 73:384-5 F 25 '15  
 Utilities bureau convention, Philadelphia, 1915; valuation conference. *Eng N* 74:1002-3 N 18 '15; *Elec Ry J* 46:990-5, 1031-4 N 13-20 '15; *Elec R & W Elec'n* 67:939-41 N 20 '15; *Elec W* 66:1125-9 N 20 '15; *Eng Rec* 72:643-5 N 20 '15; *Munic J* 39:788-9 N 18 '15  
 Valuation of merchandise inventories. *J Account* 18:461-3 D '14

See also Depreciation; Machinery—Valuation; Mine valuation; Public service corporations—Valuation; Railroads—Valuation; Real estate; Street railroads—Valuation; Waterworks—Valuation

## Valuation of railroads. See Railroads—Valuation

## Valves

- Adco graduated radiator valve. *diag Power* 41:115 Ja 26 '15  
 Air compressor valve is designed for superheated steam. *Il Eng Rec* 72:680 N 27 '15  
 Air compressor valve of steel strips. *Il Iron Age* 95:1010 My 6 '15  
 American-made reducing valve. C. F. Williams. *Il Iron Tr R* 66:16 Ja 7 '15  
 Analysis of the motion of suction and pressure valves; abstract. O. Klepal. *diags Am Soc M E J* 87:717-19 D '15  
 Atlas regulating valve. *Il Power* 42:304 Ag 31 '15  
 Automatic stop valves. W. L. Durand; J. C. Hawkins. *Power* 42:239-40 Ag 17 '15  
 Auxiliary exhaust valves on uniflow engines. A. D. Skinner. *diag Power* 41:448-50 Mr 30 '15  
 Auxiliary exhaust valves on uniflow engines. R. Trautschold. *Power* 42:59-60 JI 13 '15  
 Auxiliary exhaust valves on uniflow engines. W. Turnwald. *Power* 41:515-16 Ap 18 '15  
 Bradford automatic nonreturn boiler stop valve. *diag Power* 40:886 D 22 '14  
 Clear way pump valve. *diag Engineer* 119:212 F 26 '15  
 Cochran multiport flow valve. *Il Power* 41:508 Ap 13 '15  
 Data on reducing valves. T: Tait. *Dom Eng* 71:5 Ap 3 '15  
 Defective valves cause slippage in pumping engines. A. A. Wood. *Il Eng Rec* 71:593 My 8 '15  
 Designing high-pressure steel valves. E. G. Greenman. *diag Iron Age* 96:125-6 JI 15 '15  
 Diaphragm-operated triple valve. *diags Ry Age (Mech ed)* 89:92-4 F '15  
 Dole vacuum valve. *Il Dom Eng* 72:351 S 18 '15  
 Double-cushioned non-return valves. *diag Elec Ry J* 46:838 O 16 '15  
 Electrically operated stop valve. *diags Power* 41:840-1 Je 22 '15  
 Exhaust passage drain valve. *diags Ry Age (Mech ed)* 89:586 N '15  
 Facing up rubber pump valves. S. H. Farnsworth. *diags Power* 42:453 S 23 '15  
 Finishing tank valve castings. W. W. Elfe. *Il Ry Age (Mech ed)* 89:82 F '15  
 Flushing valve design and installation. *diags Metal Work* 32:603-5, 710-11; 33:119-21, 157-9 N 6, 27 '14, Ja 15-22 '15  
 Forty-million-revolution compressor-valve test. *Il Power* 41:537-8 Ap 20 '15  
 Golden-Anderson automatic non-return valve. *diag Ry Age (Mech ed)* 89:596 N '15  
 High pressure gas valve. *Il Ry Age (Mech ed)* 89:44 Ja '15  
 Hovalco blowoff valve. *Il Power* 42:588 O 26 '15

- Important points when installing motor-operated valves. *Elec W* 65:1626 Je 19 '15  
 Lack of synchronism in check-valve action. S. F. Jeter. *diags Power* 41:48 Ja 12 '15  
 Lunkenheimer balanced throttle valve. *Il Power* 41:814 Je 15 '15  
 Making superheated steam gate valves. *Il Iron Age* 95:845-7 Ap 15 '15  
 Multiplex atmospheric exhaust relief valve. *Il Power* 42:368 S 14 '15  
 New high-pressure gas valve. *Il Met & Chem Eng* 12:794-5 D '14  
 No. 8 Hoffman return line valve. *Il Dom Eng* 73:246 N 20 '15  
 Outfit for truing valves. D. A. Hampson. *diag Horseless Age* 85:847 Je 23 '15  
 Piston valves applied to slide valve cylinders. *Il Ry Age (Mech ed)* 89:258 My '15  
 Plate valves for high-speed air compressors. G. J. MacFadden. *diags Power* 41:368-3 Mr 16 '15; Same cond. *Eng M* 49:260-1 My '15  
 Powell automatic and double-automatic stop valve. *diags Power* 41:127-3 Ja 26 '15  
 Priming a centrifugal pump. E. M. Ivens. *Il diags Power* 41:880-2 Je 29 '15  
 Reducing piston valve leakage. V. T. Kropidowski. *diags Ry Age (Mech ed)* 89:359-60 JI '15  
 Reeves adjustable piston valve. *Il Power* 42:503 O 12 '15  
 Reseating a ball engine valve. R. A. Jannet. *diags Power* 41:518 Ap 13 '15  
 Rotary four-way valve. E. H. Wolf. *diags Ry Age (Mech ed)* 89:542 O '15  
 Rotary valve progress. *diags Horseless Age* 85:249 F 17 '15  
 Rothenbacher reversible pump valve. *diag Power* 42:752 N 30 '15  
 Rub-steel pump valve. *Il Power* 41:803 Je 15 '15  
 Setting double-eccentric Corliss valves. R. L. Shipman. *Power* 42:164 Ag 3 '15  
 Simplate valve—its construction and operation. *diags Eng* 44:297-8 O 13 '15; *Ry Age (Mech ed)* 89:545-6 O '15; *Eng & Min J* 100:805-6 N 13 '15; *Eng M* 50:sup4-5 N '15; *Int Marine Eng* 20:524 N '15; *Power* 42:615-16 N 2 '15; *Mach* 22:346 D '15  
 Simple, durable, electrically operated gas-valve. Z. Ostenberg. *Il J Ind & Eng Chem* 7:872 O '15; Same. *Am Gas Light J* 103:279 N 1 '15  
 Solenoid attachment for automatic altitude valves. *diag Eng Rec* 70:sup289 D 12 '14  
 Steam stop valves: a survey of the field of design. L. C. Bowes. *diags Sibley J* 29:231-40, 249-50, 272-84, 293-4 Ap-May '15  
 24-in. gate valve for blast furnaces: sketch. P. H. Barbour. *Eng & Min J* 99:449 Mr 6 '15  
 Use of relief valves on cupola blast pipes. *Foundry* 43:26-7 Ja '15  
 Valve part manufacturing on a bench lathe. *Il diags Mach* 22:49-50 S '15  
 Valve requirements of boilers. T. W. Reynolds. plans *Elec W* 66:976-8 O 30 '15  
 What broke the valve? E. Hurst; F. S. Hearne. *diag Power* 42:451 S 28 '15  
 What broke the valve? N. Olson. *diags Power* 42:309 Ag 31 '15  
 What broke the valve? W. J. Jones; W: A. Butler. *diag Power* 42:761 N 30 '15

See also Automobile engines—Valves; Locomotives—Valves and valve gear; Safety valves; Slide valves; Steam engines

## Cleaning

- Cleaning triple valves. *Il Ry Age (Mech ed)* 89:588 N '15  
 Valves, Hydraulic  
 Automatic compensation water valve. *Il diag Engineer* 119:609 Je 18 '15  
 Automatic control apparatus for hydraulic gate valves. *diag Eng & Contr* 43:408 My 5 '15; *Ry Age* 58:1072 My 21 '15  
 Automatic gate-valve control. *diag Eng N* 73:1098 Je 3 '15  
 Description of tests of butterfly valves on locks in the Black Warrior region, in Alabama; abstract. C: Keller. *diags Am Soc M E J* 87:613-14 O '15  
 Dexter gate-valve reseater. *Il Power* 42:300 Ag 31 '15

**Valves, Hydraulic—Continued**

- Experiences with electrically operated valve installations, under remote control, in New York city. A. Williamson. *Eng & Contr* 44: 225 S 22 '15
- Hydraulic rolling mill operating valve. *diag* Iron Age 96:811 O 7 '15
- Johnson hydraulic valve. *il Eng M* 48:sup2-4 Ja '15
- New hydraulic stop valve. C. W. Lerner. *il diags Eng N* 72:1102-3 D 3 '14
- New hydraulic valve. *il Power* 41:138 Ja 26 '15
- Reasons for retaining the solid wedge type of valve in Boston. G. H. Finneran. *Eng & Contr* 44:224-5 S 22 '15
- Standard gate valves of the New York city waterworks. *il diags Eng N* 73:1016-13 My 27 '15
- Successful application of valve inserting machine under high pressure. *il Eng & Contr* 44:98 Ag 4 '15
- Tests of butterfly valves result in modified design. *diag Eng Rec* 72:419 O 2 '15
- Twenty-ton valve lowered down 250-foot shaft in 20 min. R. W. Greenlaw. *il Eng Rec* 71: 181 F 8 '15
- Two new large Johnson valves, Oneida plant, Phoenix, Utah. *il Eng N* 74:507 S 9 '15; *Iron Age* 96:412-13 Ag 19 '15
- Water motors operate gate-valves in nozzle lines. J. W. Swaren. *il Eng Rec* 72:134 J1 31 '15

**Vanadium**

- Romantic story of vanadium. C. J. Stark. *il Iron Tr R* 57:781-4+ O 21 '15
- Simplified ferrous sulfate method for the determination of vanadium in steel. G. T. Dougherty. *J Ind & Eng Chem* 7:419-20 My '15
- Tests of vanadium iron castings. Foundry 42: 179-80 My '15; Same. *Iron Tr R* 57:221-2 J1 28 '15
- Vanadium from oxide to steel. W. F. Bleeker and W. L. Morrison. *Met & Chem Eng* 13: 492-4 Ag '15
- Vanadium in brass. R. J. Dunn and O. F. Hudson. *Metal Ind n s* 13:330 Ag '15
- Vanadium in German ores. L. Blum. *Iron Age* 95:347 Ap 15 '15

**Vanadium steel**

- Annealed carbon-vanadium product to replace heat-treated forgings for locomotives. *Iron Age* 95:1298 Je 10 '15; *Ry R* 56:810 Je 12 '15
- Properties of vanadium steel and its use in long-span bridges. G. L. Norris. *Eng & Contr* 42:495-6 N 25 '14
- Test of vanadium rails. *il Elec Ry J* 45:388 F 20 '15; *Iron Age* 95:398 F 18 '15
- Vanadium from oxide to steel. W. F. Bleeker and W. L. Morrison. *Met & Chem Eng* 13: 492-4 Ag '15
- Vanadium not a scavenger. E. W. Strong. *Iron Age* 96:1250 N 25 '15
- Vanadium steel rails of 105-lb. section. D. L. & W. R. R. *il Ry R* 56:249-51 F 20 '15; *Summary, Ry Age* 58:332 F 19 '15
- What is vanadium steel? D. J. Evans. *Mach* 22:145 O '15
- What is vanadium steel? J. L. Uhler. *Iron Age* 96:1250-1 N 25 '15

**Van Buren bridge route**

- New Canada-New England railroad link completed. *maps Eng Rec* 71:559 My 1 '15

**Vancouver, British Columbia****Railroads**

- Terminal improvements of the Canadian Pacific railway at Vancouver. *il plan Eng N* 73:340-1 F 18 '15; Same. *Ry R* 56:380-5 Mr 20 '15

**Vanilla extract**

- Acidity and ash of vanilla extract. A. L. Winton, A. R. Albright and B. H. Berry. *J Ind & Eng Chem* 7:516-19 Je '15
- Modification of Wichmann's method for the detection of small amounts of coumarin, particularly in factitious vanilla extracts. J. R. Dean. *J Ind & Eng Chem* 7:519 Je '15

**Vanillin**

- Condensation of vanillin and piperonal with certain aromatic amines. A. S. Wheeler. *Am Chem Soc J* 37:1362-4 My '15

- Effect of certain organic compounds on wheat plants in the soil. F. W. Upson and A. R. Powell. *il J Ind & Eng Chem* 7:421 My '15

**Vapor density**

- Densities and degrees of dissociation of the saturated vapor of phosphorus pentachloride. A. Smith and R. H. Lombard. *diags Am Chem Soc J* 37:2055-62 S '15
- Densities and degrees of dissociation of the saturated vapors of the ammonium halides, and the related thermal data. A. Smith and R. H. Lombard. *Am Chem Soc J* 37:38-70 Ja '15

**Vapor pressure**

- Measurement of vapor pressure lowering by the air saturation method. E. W. Washburn and E. O. Heuse. *il diags Am Chem Soc J* 37: 309-21 F '15
- Method of finding the partial from the total vapor pressures of binary mixtures, and a theory of fractional distillation. M. A. Rosanoff, C. W. Bacon, and J. F. W. Schulze. *Am Chem Soc J* 36:1993-2004 O '14
- Partial vapor pressures of ternary mixtures of toluene, carbon tetrachloride and ethylene bromide. M. A. Rosanoff, J. F. W. Schulze, and R. A. Dunphy. *Am Chem Soc J* 36:2480-95 D '14
- Rapid laboratory method of measuring the partial vapor pressures of liquid mixtures. M. A. Rosanoff, C. W. Bacon and R. H. White. *diags Am Chem Soc J* 36:1303-25 S '14
- Studies of the vapor pressure of solutions; a static method for the determination of the difference between the vapor pressure of solution and that of solvent. J. C. W. Fraser and B. F. Lovelace. *diags Am Chem Soc J* 36:2439-49 D '14
- Vapor pressure of arsenic trioxide. H. V. Welch and L. H. Duschak. *il U S Bur Mines Tech Pa* 81:1-20 '15
- Vapor pressure of ethane and ethylene at temperatures below their normal boiling points. G. A. Burrell and I. W. Robertson. *diags Am Chem Soc J* 37:1893-1902 Ag '15
- Vapor pressure of iodine between 50° and 95°. G. P. Baxter and M. R. Grose. *Am Chem Soc J* 37:1061-72 My '15
- Vapor pressure of thallium amalgams. J. H. Hildebrand and E. D. Eastman. *Am Chem Soc J* 37:2452-9 N '15
- Vapor pressures of acetylene, ammonia and isobutane at temperatures below their normal boiling points. G. A. Burrell and I. W. Robertson. *Am Chem Soc J* 37:2482-6 N '15
- Vapor pressures of certain alcoholic solutions. O. F. Tower and A. F. O. Germann. *il Am Chem Soc J* 36:2449-56 D '14
- Vapor pressures of propane, propylene and normal butane at low temperatures. G. A. Burrell and I. W. Robertson. *Am Chem Soc J* 37:2188-93 S '15
- Vapor pressures of silver, gold and bismuth amalgams. E. D. Eastman and J. H. Hildebrand. *diags Am Chem Soc J* 36:2020-30 O '14
- Vaporization. See Evaporation
- Vapors
- Composition of paint vapors. C. A. Klein. *J Ind & Eng Chem* 7:99-102 F '15
- Study of vapors from drying paint films. H. H. King. *diags J Ind & Eng Chem* 7:502-4 Je '15
- See also Evaporation; Gases; Steam; Vapor density; Vapor pressure
- Variation (biology)
- Mutation and modification of bacteria. R. Lankester. *Sci Am S* 79:319-20 My 15 '15
- Varnish and varnishing
- Constitution of Chinese wood oil varnishes. E. B. Ware and C. L. Schumann. *J Ind & Eng Chem* 7:571-3 J1 '15
- Contributions of the chemist to the paint and varnish industry. M. Toch. *J Ind & Eng Chem* 7:938 N '15
- Determination of methyl and ethyl alcohol in spirit varnishes. G. W. Knight and C. T. Lincoln. *J Ind & Eng Chem* 7:837-43 O '15
- See also Japanning; Lacquer

- Vaudremer, Emile, 1829-1914  
Sketch and appreciation. J. P. Alaux; L. Bra-  
chet; W. Cook. II plans Am Inst Arch J 3:  
292-9 J1 '15
- Vaulting. See Domes; Vaults
- Vaults  
Bank vault contains new shop fabricated unit  
reinforcement. II Eng Rec 72:sup161 O 23  
'15  
Strongest vault in the world. II Sci Am S 79:  
169 Mr 13 '15
- Vector diagrams. See Electric currents, Alter-  
nating
- Vegetable ivory  
Concerning the nutritive value of vegetable  
ivory—preliminary notes. C. L. Beals. J Ind  
& Eng Chem 7:161 F '15
- Vegetable oils. See Oils and fats
- Vegetarianism  
Investigation of vegetarianism. Sci Am 112:  
384 Ap 24 '15
- Vehicles  
Measuring shocks of vehicles and vibrations of  
buildings. A. Boyer-Guillon. II diags Sci Am  
S 78:364-5 D 6 '14  
See also Automobiles; Cars; Electric ve-  
hicles; Motor vehicles
- Veneers and veneering  
Where veneers are used. Am Ind 15:36-7 My  
'15
- Venice  
Harbor  
Works for the improvement of navigable estu-  
aries; abstract. L. Luiggi. Eng Rec 72:637-8  
N 20 '15
- Venom  
Animal venoms and venomous animals. Sci Am  
S 80:845 N 27 '15
- Ventilating fans. See Fans, Mechanical
- Ventilation  
Advance in heating and ventilating field. R. C.  
Carpenter. Metal Work 84:431-3 O 1 '15  
Air conditioning in a moving picture labora-  
tory. II plans Heat & Ven 12:20-6 F '15  
Air ozonation. M. W. Franklin. J Ind & Eng  
Chem 6:850-2 O '14; Same. Am Soc Heat &  
V E 20:337-50 '14; Excerpts. Heat & Ven 11:  
28-34 O '14; Metal Work 83:732-3 My 21 '15  
American society of heating and ventilating  
engineers twenty-first annual meeting, Janu-  
ary 20-22, 1915. Heat & Ven 12:39-48 F '15  
Analysis of modern ventilation theories.  
J. M. W. Kitchen. Heat & Ven 12:30-1 Mr  
'15  
Architect on modern ventilation ideas. C. S.  
Kaiser. Heat & Ven 12:45-6 S '15  
Blower systems for heating and ventilating.  
A. M. Feldman. diags Dom Eng 69:257 N 28  
'14; Same. Am Soc Heat & V E 20:412-15 '14  
Chicago ventilation commission first report.  
II Metal Work 83:632-5+ Ap 30 '15  
Developments and present problems in heating  
and ventilation. J. R. Allen. Am Soc Heat  
& V E 19:53-62 '13  
Downward ventilation in a Rockford, Ill.,  
schoolhouse; with discussion. C. E. Beery. II  
plans Am Soc Heat & V E 19:68-81 '13  
Edison phonograph shop. C. E. Daniel. plans  
Heat & Ven 12:13-18 Ap '15  
Engineers show need of good ventilation. Metal  
Work 83:203-7+ Ja 29 '15  
Factory building equipped with outside air  
ducts. II plans Heat & Ven 12:19-25 Ap '15  
Factory with down ventilation through col-  
umns. II plan Eng N 78:1012-13 My 27 '15  
Fans for ventilating work. C. L. Hubbard. Eng  
M 48:385-92 D '14; Same. Eng & Contr 48:  
197-9 Mr 3 '15  
Fresh air and eating. Sci Am 113:92 J1 31 '15  
Future developments in heating and ventila-  
tion. A. H. Barker. Power 41:897-8 Je 29 '15;  
Abstract. Am Soc M E J 87:490-1 Ag '15  
Heating and ventilating an office building by  
electricity; Hydraulic power co.'s plant at  
Niagara Falls. C. F. Herington. II diags plan  
Heat & Ven 12:13-22 Je '15  
Heating and ventilating conditions in large  
office building. C. E. A. Winslow and G. F.  
Maglott. Heat & Ven 12:26-31 F '15  
Heating and ventilating industrial plant. J. H.  
O'Brien. II Metal Work 83:319-22 F 26 '15  
Heating and ventilating plant for the Mis-  
souri state capitol; reversible system of air  
supply for house and senate chambers. II  
diags plans Heat & Ven 12:13-21 My '15  
Heating and ventilating practice in Sweden.  
H. Theorell. Am Soc Heat & V E 20:94-7 '14  
Heating and ventilating stables and garages.  
C. L. Hubbard. diags Dom Eng 72:168-70 Ag  
7 '15  
Heating and ventilation of main floor and ves-  
tibules of the Lord & Taylor store. J. Gra-  
ham. diags Dom Eng 72:282-3 S 4 '15  
Heating and ventilation of offices and bank-  
ing rooms. C. L. Hubbard. diags Brickb 23:  
307-10 D '14  
Horizontal air currents advocated for room  
ventilation. Heat & Ven 12:48 Ja '15  
Hygienic home: facts about ventilation and  
fresh air. J. B. Todd. Sci Am S 79:74 Ja 30  
'15  
Illinois chapter discusses kitchen ventilation.  
Metal Work 83:171 Ja 22 '15  
Improved air conditions in a Boston residence.  
F. I. Cooper. plan Am Soc Heat & V E  
19:82-8 '13  
Kitchen ventilation for a modern hotel: equip-  
ment of the Biltmore, New York. II diags  
plan Heat & Ven 12:13-18 Ja '15  
Lecture course on elements of heating. C. A.  
Fuller. Metal Work 81:129-30, 209, 281-2,  
338-9; 82:31-3; 83:574-6, 703-5, Ja 16, 30, F  
13, 27, J1 10 '14, Ap 16, My 14 '15  
Modern equipment in Detroit athletic club.  
diag plan Metal Work 84:73-6 J1 18 '15  
New observations on ventilation. O. W. Grif-  
fith. Heat & Ven 12:25-6 N '15  
New York state commission on ventilation:  
high temperatures have marked physiological  
effect. Elec Ry J 44:1330 D 19 '14  
Ozone—an aid to factory ventilation. V. D.  
Greene. diag Eng M 49:517-25 J1 '15  
Ozone and its applications. M. W. Franklin.  
Am Soc Heat & V E 19:128-40 '13  
Ozone in ventilation. J. C. Olsen and W. H.  
Ulrich. Sci Am S 78:34-5 Ja 18 '15  
Practical ventilation. C. F. Bennett. Dom Eng  
73:282-3 N 20 '15  
Progress of heating and ventilating art in the  
last decade. R. C. Carpenter. Sibley J 30:  
51-4 N '15  
Public health and sanitary rules. Metal Work  
84:465 O 8 '15  
Recent developments in ventilation work. D. D.  
Kimball. Metal Work 84:494-7 O 15 '15  
Reduction or elimination of noise attending  
the operation of mechanical ventilating ma-  
chinery. R. W. Pryor, Jr. plans Heat & Ven  
11:26-9 Ag '14; Same. Iron Age 94:210-11 J1  
23 '14; Same. Metal Work 82:275-8 S 4 '14;  
Same; with discussion. Am Soc Heat & V E  
20:330-9 '14; Discussion. Heat & Ven 11:44-5  
N '14  
Relation of ventilation to bodily health. T. R.  
Crowder. Metal Work 84:116-17 J1 23 '15  
Report of N. C. G. A. committee on heating,  
ventilation and refrigeration. G. S. Barrows.  
Am Gas Light J 101:411 D 28 '14  
Report on work of ventilation division of the  
Chicago health department for 1913. E. V.  
Hill. diag Am Soc Heat & V E 20:57-73 '14  
Theory and practice of heating and ventila-  
ting in France. G. Debesson. diags Am Soc  
Heat & V E 20:124-50 '14  
Theory of ventilation. Metal Work 84:453 O 8  
'15  
Ventilating and cooling a church. plan Bldg  
Age 37:81-2 S '15  
Ventilating and cooling church edifice. plan  
Metal Work 82:757-8 D 11 '14  
Ventilating the House of commons. A. P.  
Patey. Metal Work 83:538 Ap 9 '15  
Ventilation and the open window. M. S. Cooley.  
Am Soc Heat & V E 19:361-3 '13  
Ventilation of industrial plants. C. T. Graham-  
Rogers and W. T. Doyle. Metal Work 83:  
283+ F 19 '15; Same. Dom Eng 71:4-5 Ap 8  
'15  
Ventilation of smoking room. H. N. Oman.  
Metal Work 83:512-13 Ap 2 '15  
Ventilation of telephone and movie booths.  
R. L. Douglass. II Dom Eng 69:161-2 N 7 '14;  
Same; with discussion. Am Soc Heat & V E  
20:330-6 '14



**Ventilation—Continued.**

Ventilation standards for factories. Eng & Contr 43:519 Je 9 '15

Ventilation theory and impure air. C. F. Bennett. Metal Work 84:76 Jl 16 '15

Work of the Chicago ventilation commission. Il plans Heat & Ven 12:26-31 My '15

*See also* Air conditions; Air flow; Air purification; Air washers; Car ventilation; Chimneys; Cooling; Fans, Mechanical; Heating; Hospitals—Heating and ventilation; Hotels—Heating and ventilation; Humidity; Mine ventilation; Schoolhouses—Heating and ventilation; Subways—Ventilation; Theaters—Heating and ventilation; Tunnel ventilation; Ventilators; also Institute of heating and ventilating engineers

**Experiments**

Experiment in school room ventilation with reduced air supply through individual ducts; with discussion. F. Bass. Il Am Soc Heat & V E 19:328-60 '13

Experimental plant of the New York state commission on ventilation. Il plans Heat & Ven 12:18-26 Mr '15

Experiments arranged by New York ventilation commission. Heat & Ven 11:48 D '14

Progress of laboratory experiments with air. F. S. Lee. Metal Work 84:338-9+ S 10 '15

Recent tests on recirculation of washed air. G. L. Larson. Il Metal Work 84:675-7+ N 28 '15; Abstract. Am Soc M E J 37:723-4 D '15

Recirculating of air in a school in Minneapolis. F. Bass. Heat & Ven 12:27-30 Mr '15

Results of physiological and psychological observations during the first year's experiments: abstract. D. D. Kimball and G. T. Palmer. Power 41:177 F 2 '15

**Laws and regulations**

General statement of the committee of Am. society of heating and ventilating engineers on compulsory ventilation. Power 41:176-7 F 2 '15

Legislation for compulsory ventilation; committee report with discussion. Am Soc Heat & V E 19:179-93 '13

Proposed standards for ventilation legislation for motion picture show places; with discussion. Am Soc Heat & V E 19:166-78 '13

Ventilating division of the health department, Chicago, Ill. E. V. Hill. Il diags Am Soc Heat & V E 19:412-34 '13

**Ventilators**

Long Island railroad installs double ventilators. diag Elec Ry J 46:194 Jl 31 '15

Tests of exhaust ventilators on passenger trains. G. L. Fowler. Ry Age 58:1009-12 My 14 '15; Same. Ry Age (Mech ed) 89:235-8 My '15

**Venturi formula**

Note on the modified venturi formula for flow of gases or vapors. G. B. Upton. Sibley J 29: 90-5 D '14

**Venturi meters**

Special Venturi meter for irrigation water measurement. diag Eng & Contr 43:61-2 Ja 20 '15

Venturi meter for sewage measurement. C. G. Richardson. Il diags Boston Soc C E J 1:429-37 O '14

**Veratrine**

Veratrine and some of its derivatives. G. B. Frankforter and W. Kritchevsky. Am Chem Soc J 37:3567-9 N '15

**Vessels. See Steamboats****Viaducts. See Bridges****Vibrations**

Explorations over the vibrating surfaces of telephonic diaphragms under simple impressed tones. A. E. Kennelly and H. O. Taylor. Elec W 86:463 Ag 28 '15

Measuring shocks of vehicles and vibration of buildings: a means for investigating important traffic problems. A. Boyer-Gullon. Il diags Sci Am S 78:364-5 D 5 '14

*See also* Automobiles—Vibration

**Victoria, British Columbia****Water supply**

Costs and special features of the new water supply of Victoria, British Columbia. B. Ehle. Il diags Eng Rec 72:406-10 O 2 '15

Sooke lake water-supply for Victoria. C. H. Rust. Eng N 74:396-7 N 13 '15

Ten and three-quarters miles of 36-inch riveted-steel pressure line built on Sooke work. B. Ehle. Il plan Eng Rec 72:564-5 N 6 '15

Virgin country renders concrete pipe line construction difficult. B. Ehle. Il diags plan Eng Rec 72:507-10 O 23 '15

Villa Madama, Rome. *See* Rome (city)—Architecture

Villas. *See* Architecture, Domestic—Designs and plans

**Vincennes, Indiana****Sanitary affairs**

Sanitary survey of Vincennes. Eng & Contr 43:268 Mr 24 '15

**Vinegar**

Utility of sulfurous acid and pure yeast in older vinegar manufacture. W. V. Cruess, J. R. Zion and A. V. Sifredi. J Ind & Eng Chem 7:324-5 Ap '15

**Violin****Testing**

Apparatus for determining quality and intensity of violin tones. D. Richardson. Sci Am 113:384+ O 30 '15

**Violin playing**

Device for the simultaneous playing of violin and piano. Il Sci Am 113:471 N 27 '15

**Virginia****Capitol**

Thomas Jefferson and the first monument of the classical revival in America. F. Kimball. Il Am Inst Arch J 3:370-81, 421-34, 473-91 S-N '15

**Industries and resources**

Oriskany iron ores of Virginia. C. M. Weld. maps Econ Geol. 10:399-421 Jl '15

**Virginia power company**

Cabin Creek plant. Il diags plan map Elec W 66:239-44 Jl 31 '15

One boiler room instead of fifty; Cabin Creek plant. Il diags Elec W 66:286-91 Ag 7 '15

**Viscometers**

Comparison viscometer for oils. diag Am Gas Light J 103:301 N 8 '15

Design of an absolute viscometer for engineering testing of oils. G. B. Upton. Sibley J 29:262-9 My '15

New direct-reading viscosimeter. R. F. MacMichael. Il J Ind & Eng Chem 7:961-3 N '15; Same. Met & Chem Eng 13:787-9 O 15 '15

**Viscosity**

Conductivity and viscosity of solutions of electrolytes in formamid. P. B. Davis, W. S. Putnam and H. C. Jones. Il diags J Fr Inst 180:567-601 N '15

Theory of lubrication. L. Ubbelohde. Gen Elec R 18:986-72, 1074-81, 1118-21 O-D '15

Viscosities of binary mixtures of the associated liquids, water, formic acid and acetic acid. P. B. Davis and H. C. Jones. Am Chem Soc J 37:1194-8 My '15

Viscosity of porcelain bodies high in feldspar. A. V. Bleininger and C. S. Kinnison. U S Bur Stand Tech Pa 50:1-7 '15; Abstract. Metal Work 84:528 O 22 '15

*See also* Viscometers

**Visibility. See Optics****Visible speech**

Visible speech; eye seeing and the rule measuring the difference between sounds. A. L. Kroeber. Il diags Sci Am 112:471 My 22 '15

**Vision. See Eye****Vitamines**

Beriberi-preventing vitamins. W. P. Chamberlain. Sci Am 113:379 O 30 '15

Vitamines and cooking. D. McCaskey. Sci Am 113:379 O 30 '15

**Vitamines—Continued.**

- Vitamines, and their importance for the maintenance of health. Dr. Reinhardt. *Sci Am* 113:388-9 S 11 '15
- Vitreous. See Silica, Fused
- Vitrification. See Clay products
- Vladivostok, Siberia
- Vladivostok open all the year. J. B. Caldwell. *Sci Am* 113:487 D 4 '15
- Vocational education
- Evening courses in retail selling at University of Minnesota. *Am Ind* 15:18 Ja '15
- Learning through doing. *Sci Am* 112:624 Je 26 '15
- Lengthening the educational perspective. L. Galloway. *Am Gas Light J* 101:388 D 21 '14
- National commercial gas association courses, and compulsory education. L. Galloway. *Am Gas Light J* 103:102-3; Discussion. 103:103, 106-7 Ag 16 '15
- Rockford vocational school cooperates with central station in training employees. *Il Elec R & W Elec'n* 67:31 J1 '15
- See also Industrial education; Professional education; Technical education; Trade schools
- Vocational guidance
- Why vocational guidance. B. C. Gruenberg. *Sci Am* S 79:275 My 1 '15
- Voice
- Standardizing the art of voice production. F. S. Muckey. *Sci Am* S 79:137-8 F 27 '15
- Volatile oils. See Essential oils
- Volcanic steam. See Steam, Natural
- Volcanoes
- Diary of Kilauea. *Il Sci Am* S 79:36 Ja 16 '15
- Notes from a volcano laboratory; personal documents in the case of Kilauea and Mauna Loa. T. A. Jaggard, jr. *Il Sci Am* S 80:214-17 O 2 '15
- Sakurajima eruptions and earthquakes. E. Omori. *Sci Am* S 79:242-3 Ap 17 '15
- See also Lassen Peak
- Voltage regulation
- Automatic voltage regulators. W. H. Acker. *Il diags Elec W* 65:127-8 Ja 9 '15
- Direct-current three-wire systems. G. Fox. *diags Power* 41:505-8 Ap 13 '15
- Lamp-socket energy economizer. *Il Elec R & W Elec'n* 66:742-3 Ap 17 '15
- Regulator for car-lighting circuits. *Il diags Elec Ry J* 45:851-2 My 1 '15
- Schweitzer automatic instantaneous voltage regulator. *diag Elec R & W Elec'n* 66:271 F 6 '15
- Storage-battery voltage regulation. C. S. Redding. *Il diags Elec W* 65:1134-5 My 1 '15
- Voltage arc. See Electric arc
- Voltmeters
- Complications at the anode in the silver coulometer (voltmeter). T. W. Richards and F. O. Anderegg. *diag Am Chem Soc J* 37: 675-78 Ap '15
- Inclusion of electrolyte by the deposit in the silver voltmeter. T. W. Richards and F. O. Anderegg. *Am Chem Soc J* 37:7-23 Ja '15
- Studies on the silver voltmeter. G. A. Hulett and G. W. Vinal. *U S Bur Stand Bul* 11:553-70 My 27 '15
- Voltmeters
- Cheap 110-volt alternating-current voltmeter. A. E. Oswald. *diag Elec R & W Elec'n* 67: 973 N 27 '15
- Proper use of ammeter and voltmeter in the plating room. *Metal Ind n s* 13:67-8 F '15
- Voltmeter and ammeter in the plating room. S. E. Huenerfauth. *Metal Ind n s* 13:71 F '15
- Volumeter
- Automatic volumeter; abstract. E. G. Hopson. *diag Am Soc M E J* 37:722-3 D '15
- Volumetric analysis
- Acid potassium and acid sodium phthalates as standards in acidimetry and alkalimetry. W. S. Hendrixson. *Am Chem Soc J* 37:2852-9 O '15
- Acid ratio: a new method for determining the proteolytic strength of germinated grain in technical analysis. C. A. Nowak. *J Ind & Eng Chem* 7:858-9 O '15
- Arsenious oxide as an alkalimetric standard. A. W. C. Menzies and F. N. McCarthy. *Am Chem Soc J* 37:2021-4 S '15
- Determination of ferrous iron in silicates by titration with dichromate. O. L. Barnebey. *Am Chem Soc J* 37:1829-35 Ag '15
- Economy and rapidity in copper titrations. E. A. Slagle. *Eng & Min J* 99:285 F 6 '15
- Electro-titrimetric method and its application to general analytical chemistry. F. H. Hesselink van Suchtelen and A. Itano. *Am Chem Soc J* 36:1793-1803 S '14
- Ferrocyanide determination of zinc. *Eng & Min J* 99:285-6 F 6 '15
- Method for the precise standardization of hydrochloric acid solutions. L. W. Andrews. *Am Chem Soc J* 36:2089-91 O '14
- Method for the titration of small amounts of halides. F. C. McLean and D. D. Van Slyke. *Am Chem Soc J* 37:1128-34 My '15
- Rapid analysis of alloys for tin, antimony and arsenic. F. A. Stief. *diag J Ind & Eng Chem* 7:211-12 Mr '15
- Rapid precise standardization of acid solutions. M. Randall and C. C. Scallone. *Met & Chem Eng* 13:787 N 1 '15
- Standardization of alkalimetric solutions. F. D. Dodge. *J Ind & Eng Chem* 7:29-30 Ja '15
- Titration of nitrates with ferrous sulfate. F. C. Bowman and W. W. Scott. *J Ind & Eng Chem* 7:766-9 S '15
- Volumetric estimation of titanium by means of ferric chloride. T. R. Ball and G. M. Smith. *Il Am Chem Soc J* 36:1838-43 S '14
- Volumetric Fehling method using a new indicator. A. M. Breckler. *J Ind & Eng Chem* 7:37-8 Ja '15
- Volumetric apparatus
- Portable titrating table. R. E. Orlas. *Il diag J Ind & Eng Chem* 7:873-3 O '15
- Testing of glass volumetric apparatus. *diags U S Bur Stand Circ* 9:1-31 '14
- Titration table. R. S. Potter and R. S. Snyder. *Il J Ind & Eng Chem* 7:46-6 Ja '15
- See also Pipets
- Voting
- Voting by electrical apparatus. *diags Elec R & W Elec'n* 66:744-5 Ap 17 '15
- Voting machines
- Voting machines in Wisconsin. F. H. MacGregor. *Munic J* 39:858 O 23 '15
- Vulcanized fiber
- Vulcanized fibre. C. Almy, jr. *Il Met & Chem Eng* 13:746-7 O 15 '15

## W

- Wabash railroad
- Reorganization plan. *Ry Age* 58:978 My 7 '15
- Statistics. map *Ry Age* 58:266-7 F 12 '15
- Waco, Texas
- Water supply
- Water sedimentation, coagulation and mechanical filtration at Waco, Texas. *Il Eng N* 72: 1162-3 D 10 '14
- Wages
- Census of employees and wages. *Elec W* 65:600 Mr 6 '15
- Construction superintendent favors paying off in cash. *Eng Rec* 71:245-6 F '15
- Fifteen years' wage increases in the Canadian northwest. *Eng N* 73:395 F 25 '15
- Handling employees so as to minimize costs. A. M. Burroughs. *Metal Work* 82:790-3+ D 13 '14
- Investigation of wages paid by Pullman company. *Ry Age* 58:786 Ap 9 '15
- Iron and steel wages and hours. *Iron Age* 95: 1265 Je 3 '15
- Methods of adjusting mining rates. L. Gluck. *Colliery* 35:349-53 F '15
- Reduced sheet and tin mill wages. *Iron Age* 95:360 F 11 '15
- Rising wage differential and the cure. *Ry Age* 58:1429 Je 18 '15
- Seven per cent wage reduction granted; British Columbia electric railway, ltd. *Elec Ry J* 46: 392-4 S 4 '15

**Wages—Continued**

- Wage systems in the railroad repair shop. E. Cordeau. Eng J 49:51-7 Ap '15  
 Wage systems of scientific management. Ind Eng 15:45-50 F '15  
 Wages and hours of labor in the iron and steel industry. table Mach 21:954 Ag '15

*See also* Bonus system; Labor and laboring classes; Minimum wage; Piece work; Profit sharing

**Walking excavator**

- Dredge walks along over trench. II Eng N 74: 942 N 11 '15  
 Excavating machine that walks. II diag Sci Am 113:88 JI 17 '15

**Wall decoration.** *See* Mural painting and decoration**Walls**

- Dry masonry walls for highway embankments. II Eng Rec 70:687 D 26 '14  
 Lateral strength of hollow-tile walls; tests at St. Louis. II diag Eng N 73:428-9 Mr 4 '15  
 Length of life of walls of mortar on metal lath. W. E. Belcher. Eng Rec 71:754 Je 12 '15  
 Old wall used as coffer-dam falls at Louisville. II Eng N 74:764-5 O 14 '15  
 Stucco board vs. standard built walls. II Bldg Age 37:67-8 Ap '15

*See also* Building; Dams; Foundations; Mural painting and decoration; Partitions; Plaster and plastering; Retaining walls; Sea walls

**Walls, Concrete**

- Curbing the sea at Galveston. H. M. Robert. II Sci Am 113:268 S 25 '15  
 Field methods in concrete construction—wall forms: design and construction. J. Cochran. Concrete Cem 7:23-6 JI '15  
 Model target ranges in Belgium. Sci Am S 79:165 Mr 13 '15  
 Molds for insulated concrete walls. diag Concrete Cem 7:88 Ag '15  
 New type of concrete wall construction. diag Concrete Cem 6:208 My '15  
 Subway undercrossing walls concreted from the top down. II diag Eng Rec 72:26-8 JI 3 '15

**Walton, Charles S.**

- Residence of Charles S. Walton, Esq. R. D. Murray. Arch Rec 33:501-23 N '15

**War**

- Campaigning in winter. Sci Am 111:461 D 5 '14  
 Disease in warfare. Sci Am 112:468 My 23 '15  
 Eugenics and war. Sci Am S 79:230 Ap 10 '15  
 Lessons of the present war from a technical point of view. H. Maxim. Sci Am 112:463 My 15 '15  
 Nerves and the war. A. Eulenburg. Sci Am 112:214 Mr 6 '15  
 Steam or electric railways in time of war. Engineer 119:142 F 5 '15  
 War then and now; comparison between Civil war and European war. I. R. Sherwood. Sci Am 112:480 My 8 '15  
 Wars, ancient and modern. Sci Am 113:236 S 11 '15

*See also* Aeronautics, Military; Automobiles in war; Electricity in war; International law; Military art and science; and other headings beginning Military; Motorcycles in war; Peace; Railroads in war; Submarine warfare; Transportation, Military; War games; War materials; Wireless telegraph in war; also European war, 1914-

**Relief of sick and wounded**

- Exposition of military sanitation; showing how the sick and wounded are cared for. A. Gradenwitz. II Sci Am S 79:316-17 My 15 '15  
 Letters from the firing line: the care of the wounded. X. Sager. II Sci Am 111:510+- D 19 '14

*See also* Ambulances; Hospital cars; Hospital trains; Surgery, Military; also European war—Medical and sanitary affairs; European war—Relief work

**War, Cost of**

- Prodigious war wastes in minor items. Eng & Min J 100:898 N 27 '15  
 War and its bearing upon contracts and trade. A. Del Mar. Eng M 50:23 O '15

**War, Maritime**

*See also* Lusitania (steamship); Submarine warfare

**War cripples.** *See* Cripples**War games**

- War game and how it is played. II Sci Am 111: 470-1 D 5 '14

**War materials**

- Connecticut to Poland by way of the Pacific; how munitions are shipped to Russia across Asia. H. E. Suplee. map Sci Am 113:115 Ag 7 '15

- Government and work on munitions. Iron Age 96:728-9 S 23 '15

- Government plant for making munitions. H. H. Campbell. Iron Age 96:910-11 O 14 '15

- Making munitions of war in England. Sci Am S 80:181 Ag 28 '15

- Making of war munitions at private works; government seeks data. Iron Age 96:358 Ag 12 '15

- Mobilisation of war raw materials in Germany. Engineer 119:307-8 Mr 26 '15; Same. Sci Am S 80:30 JI 10 '15

- Munition metals. H. C. H. Carpenter. Sci Am S 80:262-3 O 23 '15; Abstract. Eng M 50:112-13 O '15

- Munitions of war bill introduced in the House of Commons on June 23. Engineer 120:24-5 JI 2 '15

- Naval and military exhibit of the National security league. II Sci Am 112:626 Je 26 '15

- Selling arms and ammunition. Sci Am 113:154 Ag 21 '15

- Terms of contracts for war munitions. Iron Age 96:635-6 S 16 '15

- Use of aluminium in war. N. Flamel. Sci Am S 80:208 S 25 '15

- War material and invention. Engineer 119:605-6 Je 18 '15

- War order activity in New England. Iron Age 96:301-3 JI 22 '15

- War orders and American industry. Eng M 49: 481-8 JI '15

- War rushes French plants; automobile factories working 24 hours a day on ammunition, aeroplane and military supplies. W. F. Bradley. II Automobile 32:1013-15+ Je 10 '15

- War significance of cotton. Sci Am 113:33 JI 10 '15

*See also* Ammunition; Automobiles in war; Cotton as contraband of war; European war—Commercial and financial aspects; European war—Military equipment; Motorcycles in war; Shells; Shrapnel shells

**War monuments.** *See* Monuments**War news**

- Mobilizing news. C. E. Crane. II Sci Am 112: 134-5 F 6 '15

**War orders.** *See* War materials**War ships.** *See* Warships**Ware, William Robert, 1832-1815**

- Sketch. A. D. F. Hamlin. por Am Inst Arch J 3:382-6 S '15

**Warehouses**

- Carnegie steel co. warehouse opens at Boston. II plan Iron Tr R 56:620-2 Mr 25 '15

- Carnegie steel company's Boston warehouse at Allston, Mass. II Iron Age 95:670-2 Mr 25 '15

- Concrete warehouses and terminal plant at New Orleans will cover 100 acres. II plan Eng Rec 71:402-3 Mr 27 '15

- Concreting plant for large Chicago warehouse. II plans Eng N 74:289-91 Ag 12 '15

- Cotton warehouse and terminal at New Orleans. diag Eng N 73:1217 Je 24 '15

- Design and construction of Midland warehouse, Chicago. II diag plans Eng & Contr 44:182-4 S 8 '15

- Electrical installation in Seattle warehouse. Elec R & W Elec'n 67:895-6 N 13 '15

- Electricity in large steel warehouses. II Elec R & W Elec'n 67:463-5 S 11 '15

- Galveston Carnegie warehouse. E. C. Kreutzberg. II Iron Tr R 56:169-70+ Ja 21 '15

- New steel and concrete structure to furnish nearly sixteen acres of floor space; Bingham warehouse in Cleveland. diag plan Eng Rec 72:356-7 S 18 '15

**Warehouses—Continued.**

- New steel warehouse of Joseph T. Ryerson & son, Jersey City. *II* Iron Age 96:298-9 Ag 5 '15; Iron Tr R 57:270-1 Ag 5 '15
- Paving for piers, warehouses and garages. plan Eng N 73:952-4 My 13 '15
- Remodeled warehouse at St. Louis. *II* Iron Tr R 57:90-1 JI 8 '15
- Reservoir effects in freight movements. R. H. Rogers. *II* Int Marine Eng 20:107-9 Mr '15
- Retailing steel mill products. *II* plan Iron Tr R 56:65-71 Ja 7 '15
- River-front approach to a Chicago building. *II* Eng N 74:817 O 28 '15
- Structural features of a reinforced concrete combined storage warehouse and office building in Seattle. diags Eng & Contr 42: 445-51 N 11 '14
- Warehouse business requires speed. *II* Iron Tr R 57:578-9 S 23 '15
- Wenter & Drechsler fireproof storage warehouse. diags Brick 23:294 D '14

See also Freight houses; Grain elevators

- Warm air furnaces. See Furnaces, Hot air
- Warm air heating and ventilating association, National. See National warm air heating and ventilating association

**Warping machines**

- Creel for warping machines. *II* Textile World 50:186-7 N '15

**Warren brothers co., Boston, Mass. :**

- Organization and work of a national paving company. *II* Eng N 73:712-16 Ap 15 '15

**Warrents. See Pavements, Bitulithic****Warships**

- Applicability of electrical propulsion to battleships, together with the experience gained with it on the Jupiter: abstract. S. M. Robinson. *Int Marine Eng* 20:19-21 Ja '15
- Application of electricity in naval warfare. H. L. Hibbard. *II* Sibley J 29:261-61 My '15
- Are obsolete battleships obsolete? *Sci Am* 112:356 Ap 17 '15
- Coaling United States warships. *II* diag *Sci Am* S 79:276-7 My 1 '15
- Electrical equipment of a battleship. *Elec R & W Elec'n* 66:571-2 Ap 10 '15
- Electrical propulsion on battleships. *Int Marine Eng* 20:3 Ja '15
- Fighting efficiency of the "Iron Duke" and the "Kaiser." S. J. Mesher. *Sci Am* 113:79 JI 24 '15
- Formula for calculating the tactical value of fighting ships. A. Given. *Sci Am* 112:50 Ja 9 '15
- Launching data for a battleship: abstract. J. G. Tawressey. *Int Marine Eng* 20:9-11 Ja '15
- Naval lessons of the war. H. M. Kennard. *Sci Am* 112:478 My 22 '15
- "Pennsylvania" and "Queen Elizabeth." C. B. Gary. *Sci Am* 113:79 JI 24 '15
- Refueling warships at sea: abstract. S. Miller. *Int Marine Eng* 20:17-18 Ja '15
- Revolutionizing naval construction. *Sci Am* 113:288 O 3 '15
- Super-battle-cruiser. *Sci Am* 112:510 Je 5 '15
- Turbine-electric propulsion for battleships. *Eng Rec* 71:607 My 15 '15
- Warship types of the future. W. B. Chalfant. *Sci Am* 113:321 O 9 '15
- Warships of the future. *Engineer* 119:359-60 Ap 9 '15
- Which is the most powerful battleship? J. B. Walker. *II* diags *Sci Am* 113:80-1 JI 24 '15
- See also Armor plate; Naval guns; Navies; Submarine boats; Tenders, Naval; Torpedo boat destroyers

**Argentina**

- Electrical equipment of the Argentine battleship Moreno. H. A. Hornor. *II* diags *Am Inst E E Pro* 33:1543-68 O '14; Summary. *Elec W* 64:752-3 O 17 '14; Discussion. *Am Inst E E Pro* 34:679-84 Ap '15

**Austria**

- Austrian gun boats on the Danube. F. von Pills. *II* *Sci Am* 113:299 O 2 '15

**France**

- French battleships Bretagne and Provence. *II* *Int Marine Eng* 20:198-9 My '15

- New French battleship Tourville. M. K. Barnett. *II* diag *Sci Am* 113:45 JI 10 '15
- New French battleships: trials of the Paris and France—launch of the Gascogne, Normandie and Flandre. *II* *Int Marine Eng* 19:551-3 D '14

**Great Britain**

- Loss of the pre-dreadnought Bulwark. *II* *Sci Am* 111:489 D 12 '14
- Super-dreadnought Queen Elizabeth at the Dardanelles. plan *Sci Am* S 79:299 My 8 '15

**United States**

- Keel of first electrically propelled battleship laid. *Elec W* 68:844 O 16 '15
- Largest battleship launched; the U. S. S. Pennsylvania. *Eng N* 73:556 Mr 18 '15
- Launching of the battleship Arizona. G. H. Barber. *II* diags *Int Marine Eng* 20:334-6 Ag '15
- Reduction gears on the Pennsylvania. *II* diags *Int Marine Eng* 20:339-40 Ag '15
- United States battleship California and class. *Sci Am* 113:63 JI 17 '15
- United States dreadnought Nevada. *II* *Sci Am* 113:424 N 13 '15
- Warship construction in navy yards. P. F. Peterson. *Int Marine Eng* 20:178-9 Ap '15

- Washburn shops. See Worcester polytechnic institute

- Washed metal. H. D. Hibbard. *II* plan *Am Inst Min E Bul* 108:2387-94 D '15

**Washing. See Laundry****Washing machines, Electric**

- Electric washer for use in stationary tubs. *II* *Elec R & W Elec'n* 67:250 Ag 7 '15
- Electric washer with inclosed gearing. *II* *Elec W* 66:468 Ag 28 '15
- Electric washer with vacuum agitator. *II* *Elec W* 66:424 Ag 21 '15
- Horton electric washer. *II* *Elec R & W Elec'n* 67:587-8 S 25 '15
- Johnson electric washer. *II* *Elec R & W Elec'n* 66:744 Ap 17 '15
- New Dodge & Zull electric vacuum washer. *Elec R & W Elec'n* 66:740-1 Ap 17 '15
- White washing machine. *II* *Elec R & W Elec'n* 67:442-3 S 4 '15

**Washington, D. C.**

- McKim and the park commission. G. Brown. *II* plan *Arch Rec* 33:681-9 D '15
- Washington plan and its progress. W. W. Harts. *Am Inst Arch J* 3:241-2 Je '15
- See also Ellen Wilson memorial homes

**Architecture**

- New building for the Bureau of engraving and printing. *II* diags *Arch & Bldg* 46:463-70 D '14
- New post office. *II* *Arch & Bldg* 46:423-9 N '14
- Old City Hall, Washington, D. C. H. F. Cunningham. *II* diag *Arch Rec* 37:268-73 Mr '15

**National museum**

- Mineral-industry exhibit at the National museum. C. G. Gilbert. *II* *Eng & Min J* 100:470-2 S 18 '15

**Streets**

- Analyses of asphaltic concrete and asphalt block laid in 1914. *Eng & Contr* 43:43 Ja 13 '15
- Bituminous concrete pavement construction in Washington. M. Brooke. *II* *Eng & Contr* 43:325-6 Ap 7 '15
- Records of Washington's street cleaning. *Munic J* 38:654-5 My 13 '15

**Water supply**

- Water waste surveys in the District of Columbia. P. Lanham. *II* *Eng & Contr* 43: 275-6 Mr 24 '15

**Washington (state)****Industries and resources**

- Possible occurrence of oil and gas fields in Washington. C. E. Weaver. *Am Inst Min E Bul* 103:1419-27 JI '15; Discussion. 103:2431-3 D '15
- Washington university, St. Louis, Missouri
- Washington university, St. Louis. G. Study. *II* plan *Arch Rec* 37:64-75 Ja '15

**Waste.** See Trade waste; Waste heat; Waste products, and references under that subject; Water waste

### Waste fuel

Coke recovered from the cupola dump. W. J. Keep. Iron Tr R 56:382-+ F 18 '15  
Firing low-grade fuel and wastes. S. H. Bunnell. Power 41:378 Mr 16 '15

See also Fuel economy; Sawdust as fuel

### Waste heat

Exhaust-gas heated boiler. G. Moore. diag Power 41:893 Je 29 '15  
Heat energy from the Bessemer process. G. Butz. Iron Age 95:618-19 Mr 18 '15  
Heater utilizing gas engine exhaust. diag Iron Age 96:413 Ag 19 '15; Same. Metal Work 84:317 S 3 '15; Same cond. Ind Eng 16:89 S '15  
How to make steam from slag. W. L. Johnson. diag Iron Tr R 55:1189-40 D 17 '14  
Recovery of heat losses in internal combustion engines; abstract. J. B. Merriam. diag Am Soc M E J 37:295-6 My 15  
Reverberatory waste-heat boilers. L. Duncan. II diag Eng & Min J 99:153-8 Ja 16 '15  
Utilization of waste heat for the generation of electrical energy. H. Hobson. diag Inst E E J 53:814-8 Je 15 '15  
Utilizing waste heat in a drop forge shop: hot gases from furnaces used to generate steam. II diag plan Iron Age 95:45-7 Ja 7 '15  
Waste-heat boilers. O. Monnett. diag Power 41:196-7 F 9 '15; Same. Eng & Min J 99:368-9 F 20 '15  
Waste-heat boilers at Chrome. N. J. C. L. Brower. II diag Eng & Min J 99:892-5 My 22 '15  
Waste-heat boilers in steel plants. C. J. Bacon. diag Iron Age 95:1349-52 Je 17 '15; Abstract. Iron Tr R 56:1123-4 Je 3 '15; Abstract. Power 42:27-8 JI 6 '15  
Waste heat to stimulate plant growth. Sci Am 113:445 N 20 '15

See also Exhaust steam

**Waste metal.** See Metal waste; Scrap metal

### Waste paper

Where waste newspapers go. Sci Am 111:471 D 5 '14

### Waste products

Baling waste paper, shavings and excelsior. B. J. Yungbluth. Elec Ry J 45:239 Ja 30 '15  
Coal gas residuals—Feld process. F. H. Wagner. Am Gas Inst Pro 9:pt 1, 840-61 '14; Same cond. Am Gas Light J 101:305-9 N 16 '14; Same cond. Met & Chem Eng 12:698-703 N '14; Same cond. Sci Am S 80:316-19 N 13 '15; Discussion. Am Gas Inst Pro 9:pt 1, 361-7 '14  
Experience gained in the treatment of the wastes from the scouring of wool. H. R. Crohurst and A. D. Weston. Eng & Contr 44:370-6 N 10 '15  
Garbage and rubbish disposal in Los Angeles. S. C. Simons. II plan Munic J 38:799-803 Je 10 '15  
Gas producers with by-product recovery. A. H. Lynn. II diag Am Soc M E J 37:253-56 My '15  
Making fuel out of garbage. W. D. Hornaday. II Munic Eng 48:304-5 My '15  
Modern reclamation plant and scrap yard. Ry R 57:281-4 Ag 28 '15  
Power with by-product recovery. T. R. Wolaston. Engineer 119:326-7 Ap 2 '15; Same. Sci Am S 80:42-8 JI 17 '15  
Pulp from cotton stalks. Sci Am 113:482 D 4 '15  
Railway storekeepers' association: committee report. Ry Age 58:1039-41 My 21 '15  
Reburning of lime from alkali waste and other forms of precipitated carbonate of lime. R. K. Meade. diag Met & Chem Eng 13:289-90 My '15  
Reclaimed rubber. Engineer 120:428-9 N 5 '15  
Utilization of cotton waste by German and Austrian methods. F. Nasmith. Textile World 49:sup251-+ My '15  
See also Blast furnace gas; Coke oven gas; Cotton waste; Fish waste; Flue dust; Metal waste; Refuse and refuse disposal; Scrap metal; Sewage sludge; Slag; Smelter fumes; Tar; Trade waste; Waste fuel; Waste paper; Wood ashes; Wood waste

### Waste removal

Exhaust fan ratings and pipe diameters. Metal Work 83:721-2 My 21 '15  
See also Dust removal

### Watch springs

Watch spring testing apparatus. II Sci Am 111:494 D 12 '14

### Watches

Electrical revolution counter and stopwatch. II Elec W 66:1105 N 13 '15  
Lancaster's experience with time-inspection system. R. B. Hull. Elec Ry J 46:1034-5 N 20 '15  
Use and care of a watch. Sci Am S 79:233 Ap 10 '15  
Watch standards. A. J. Boardman. Elec Ry J 46:874-5 O 23 '15  
See also Watch springs

### Testing

Certified watches; a laboratory for testing watches at the Bureau of standards. L. W. Thavis. II Sci Am 113:83 JI 24 '15  
Measurement of time and tests of timepieces. pl U S Bur Stand Circ 51:1-39 '14

### Water

Chlorides in oil-field waters. C. W. Washburne. Am Inst Min E Bul 87:375-81 Mr '14; Discussion. 100:825-30 Ap '15  
Density and volume of water; table. F. R. Low. Power 42:542-3 O 19 '15  
Effect of the mineral content of water on canned foods. H. L. Huenink and E. Bartow. J Ind & Eng Chem 7:495-6 Je '15  
See also Feed water; Hydraulic engineering; Hydraulics; Ice; Mine water; Mineral waters; Rain; Rivers; Sea water; Springs; Steam; Water supply, and other headings beginning Water; Waterways; Waves; Wells

### Analysis

Chemical standards for the hygienic purity of public water supplies in Montana. W. M. Cobleigh. Eng & Contr 42:178 Ag 19 '14  
Contributions of the chemist to the potable water industry. W. P. Mason. J Ind & Eng Chem 7:289-90 Ap '15  
Determination of gases dissolved in waters and effluents. A. A. Swanson and G. A. Hulett. diag Am Chem Soc J 37:2490-500 N '15  
Determination of sulfates in water by benzidine hydrochloride. F. W. Bruckmiller. J Ind & Eng Chem 7:600-2 JI '15  
Examination of drinking water on railway trains. E. Bartow. Am Water Works Assn J 2:74-82 Mr '15  
Laboratory control of water supplies. E. Bartow. II diag plan Am Water Works Assn J 1:720-6 D '14  
Ortho-toluid test for free chlorine. W. F. Monfort. Am Water Works Assn J 1:734-6 D '14  
Perchloric method of determining potassium. C. Scholl. Am Chem Soc J 36:2085-9 O '14  
Permanent cotton disc sediment records for water and sewage. G. C. Whipple and J. W. M. Bunker. Eng & Contr 42:420 O 28 '14  
Use of silver nitrate as a testing agent. Int Marine Eng 20:35 F '15  
Water analysis and the nitrogen content of water. W. M. Booth. Am Water Works Assn J 2:61-4 Mr '15

### Bacteriology

Although chlorinated, B. coli increase in number. H. E. Jordan. Eng Rec 71:621-2 My 15 '15  
Bacteriological standard for drinking water on common carriers. Eng Rec 70:617-18 D 5 '14; Eng N 72:1203 D 17 '14; Munic J 37:924 D 24 '14; Eng & Contr 43:77 Ja 27 '15; Am Water Works Assn J 2:67-73 Mr '15  
Biochemical and engineering aspects of sanitary water supply. G. W. Fuller. J Fr Inst 180:17-61 JI '15  
Columbus experts determine B. coli vagaries. Eng Rec 72:161-2 Ag 7 '15  
Culture media employed for the bacteriological examination of water. H. M. Chamot and H. W. Redfield. Am Chem Soc J 37:1606-80 Je '15

**Water—Bacteriology—Continued**

- Culture media employed for the bacteriological examination of water: lactose-peptone media. E. M. Chamot and C. M. Sherwood. *Am Chem Soc J* 37:1949-59 Ag '15
- Incubator for testing water-chlorination results at Hudson Falls, N. Y. M. F. Tiernan. *Eng N* 72:1221 D 17 '14
- Object and limitations of bacteriological examination of water. W. H. Frost. *Eng & Contr* 42:260 S 9 '14
- Stripping water-works reservoirs. A. Hazen and G. C. Whipple. *Eng N* 73:858-60 My 6 '15
- Studies on the culture media employed for the bacteriological examination of water: the composition of the gases formed in lactose-peptone fermentation tubes. E. M. Chamot, C. M. Sherwood, and R. C. Lowary. *diags Am Chem Soc J* 37:2198-204 S '15
- Water-borne typhoid fever epidemic at Healdsburg, Cal. W. A. Sawyer. *Eng & Contr* 44:179-80 S 8 '15

**Water, Distilled**

- Distillation of water. G. W. McKee. *Il Am Gas Light J* 102:404-7-4 Je 28 '15
- Studies on water drinking; intestinal putrefaction as influenced by the ingestion of softened and distilled waters. C. P. Sherwin and P. B. Hawk. *Am Chem Soc J* 36:1779-85 Ag '14
- Studies on water drinking; the relation between water ingestion and the ammonia, phosphate, chloride and acid excretion. D. W. Wilson and P. B. Hawk. *Am Chem Soc J* 36:1774-9 Ag '14

**Water, Underground**

- Delusions about underground water. *Sci Am* 113:408 N 6 '15
- See also Mine water; Springs; Wells

**Water aeration**

- Aeration basin of the new water purification plant at Miraflores, Canal Zone. G. M. Wells. *Eng & Contr* 42:489-90 N 18 '14
- Temporary water aerator at the Kensico reservoir. W. F. Smith. *Il diags Eng N* 73:768-9 Ap 23 '15

**Water birds**

- Conserving the waterfowl. A. A. Allen. *Am For* 21:1047-8 N '15

**Water closets**

- Flushing valve design and installation. *diags Metal Work* 82:603-5, 710-11; 83:119-21, 157-9 N 6, 27 '14, Ja 15-22 '15
- Local venting of plumbing fixtures. J. Graham. *diags Dom Eng* 71:60-2, 152-3 Ap 17, My 8 '15

- Water closet vent fittings. *Il Dom Eng* 72:145 J 31 '15

See also Toilet rooms

**Water columns**

- Piping water columns. L. Marler. *Il Power* 42:727 N 23 '15
- Queer action in a water column. F. F. Jorgensen. *diag Power* 41:787-8 Je 8 '15
- Safety-first water column. *Il Power* 41:473 Ap 6 '15
- Visits of inspector Brown. J. E. Terman. *diag Power* 42:369-70 S 14 '15

**Water companies**

- Example of direct competition between publicly and privately owned water works plants in Tarentum, Pa. L. Hudson. *Eng & Contr* 44:162-3 S 1 '15
- State regulation of the operation of a small water works in Pennsylvania. *Eng & Contr* 43:108-4 F 3 '15

See also Water meters

**Law**

- New Jersey supreme court upholds decision awarding damages for illness contracted from drinking impure water supply. *Eng & Contr* 43:423-4 My 12 '15

**Public relations**

- Effective water works publicity measure at Terre Haute. *Eng & Contr* 44:161-2 S 1 '15
- Water works publicity measures employed at Terre Haute, Indiana. D. R. Gwinn. *Eng & Contr* 43:896-7 My 5 '15

**Water conduits**

- Arched reinforced-concrete conduits designed by the theory of least work. W. M. Smith. *Eng Rec* 71:648-52 My 22 '15; Discussion. 71:753 Je 12 '15
- Constructing a 70-mi. water conduit in Alaska. H. H. Hall. *Eng N* 74:233-4 J 1 29 '15; Same. *Eng & Min J* 100:760-1 N 6 '15
- Construction of the Sooke gravity flow line at Victoria, B. C. *Il Concrete Cem* 6:299-300 Je '15
- Design and methods and cost of constructing the Los Angeles city trunk line, connecting aqueduct to distribution system. B. A. Heinly. *Il diags Eng & Contr* 43:890-4 My 5 '15
- Design features of Cottonwood conduit and new concrete settling basin at San Diego. *diags Eng & Contr* 43:186-8 F 10 '15
- Fall River mills will benefit by \$3,000,000 water and sewerage project. *diag Eng Rec* 72:501-3 O 23 '15
- Hydraulics of irrigation, drainage, and other channels. L. Schmeer. *Eng & Contr* 42:284-90 S 23 '14
- New water-conservation scheme at Fall River, Mass. *diag Eng N* 74:760-1 O 14 '15
- Pipe tunnel backfilled through auger holes. *Il diags Eng Rec* 71:715 Je 5 '15
- Plan for condensing-water supply for Fall River, Mass. H. S. Knowlton. *plan Power* 42:643-4 N 9 '15
- Reinforced-concrete conduit analysis simplified by theory of displacements. C. S. Whitney. *Eng Rec* 72:486-8 O 16 '15
- Table of circular and horseshoe conduit sections. *Eng N* 73:1182-3 Je 17 '15

See also Aqueducts; Flumes; Water pipes; Water supply engineering

Water conservation. See Water laws and legislation

**Water consumption**

- Meters cut Omaha's water consumption 20 per cent. *Eng Rec* 71:712 Je 5 '15
- New Orleans water consumption. *Munic J* 39:255-6 Ag 19 '15
- Procedure at Kalamazoo, Mich., in case of excessive meter registration. *Eng & Contr* 44:387 N 17 '15
- Report of committee on water consumption. American water works association, 1913-1915. *Am Water Works Assn J* 2:181-99, 280-3 Mr-Je '15

See also Water meters; Water waste

Water cooling. See Cooling towers

Water distillation. See Distillation

**Water drinking**

- Studies on water drinking; intestinal putrefaction as influenced by the ingestion of softened and distilled waters. C. P. Sherwin and P. B. Hawk. *Am Chem Soc J* 36:1779-85 Ag '14
- Studies on water drinking; the relation between water ingestion and the ammonia, phosphate, chloride and acid excretion. D. W. Wilson and P. B. Hawk. *Am Chem Soc J* 36:1774-9 Ag '14

**Water flow**

- Color used in hydraulic tests of power plants. R. Taylor. *diags Eng N* 74:617-20 S 23 '15
- Current meters for measuring flow in pipes. H. P. Boardman. *Eng N* 73:1180 D 10 '14
- Diagram for estimating flow in channels and conduits. G. D. Fish. *Eng N* 73:732-4 Ap 15 '15
- Diaphragm method for the measurement of water in open channels of uniform cross-section. C. R. Weidner. *bibilog Il Wis U Bul Eng S* 8:1-72 no 1 '14; Excerpts. *Eng N* 72:532-4 S 10 '14; *Eng & Contr* 42:414-15 O 28 '14
- Discharge of water through nozzles. F. W. L. Peebles. *Eng Rec* 70:837 D 12 '14
- Experiments on the flow of sand and water through spigots. R. H. Richards and B. Dudley, Jr. *diags Am Inst Min E Bul* 97:67-72 Ja '15; Same cond. *Met & Chem Eng* 13:120 F '15; Discussion. *Am Inst Min E Bul* 101:1122-3 My '15
- Flow over weirs with imperfect contractions. G. J. Davis, jr. *diags plan Wis U Bul Eng S* 8:77-145 no 2 '14

**Water flow—Continued.**

Harrison weir-flow recorder. *Il Eng & Min*

J 100:844 N 20 '15

Hydraulic jump, in open-channel flow at high velocity; abstract. K. R. Kennison. *Am Soc M E J* 37:655 N '15

Investigation of flow through four-inch submerged orifices and tubes. L. R. Balch. *diags Wis U Bul Eng S* 8:151-77 no 3 '14

Methods employed in determining hydraulic elements of unlined water tunnel at Rio Janeiro. R. S. Wark. *diag Eng & Contr* 44:75-6 J1 23 '15

New type of flow recorder. *Il Heat & Ven* 13:52-3 Ag '15

Recent tests on flow of water acted on by a propeller; abstract. Flamm. *Am Soc M E J* 37:559 S '15

Recorder for measuring flow over weirs. *Il Ry Age (Mech ed)* 89:433 Ag '15; *Elec W* 66:605-6 S 11 '15

St. Louis engineers test filter controllers. *diag Eng Rec* 73:284-5 S 4 '15

Salt solution test shows turbine efficiency of 93 per cent at Holtwood plant. *Il diags Eng Rec* 71:358-60 Mr 20 '15

Stream gaging by titration; comparative tests of new chemical and standard mechanical methods of gaging stream flow. L. W. Collet, R. Mellet and O. Lüttsch. *diag plans Eng & Contr* 42:270-3 S 16 '14

Testing water-main flow. R. C. Hardman. *Eng N* 74:348 O 28 '15

Tests of a proportional weir. *Il Eng N* 74:1018-19 N 25 '15

*See also* Hydraulics; Pitometer; Stream flow; Stream measurement; Venturi meters; Water measurement; Weirs

**Water gage cocks**

Water gage cocks. P. R. Duffey. *diags Ry Age (Mech ed)* 89:136 Mr '15

**Water gages**

Hydro-chronograph for recording water levels. *Il Munic J* 39:237-8 Ag 12 '15

Mercury column alarm for standpipes successfully employed at Ripon, Wis. W. E. Haseltine. *diag Eng & Contr* 43:560-1 Je 23 '15

Pressurized water gage. *Il diags Power* 41:157 F 2 '15

Reservoir indicating gage. T. K. Lee. *diag Power* 41:755 Je 1 '15

Safe guard gage glass reflector. *Il Power* 41:835 Je 22 '15

Simple water-level indicator. H. K. Willson. *diag Power* 42:423-4 S 21 '15

Water level indicator for tanks. *diag Iron Age* 86:576 S 9 '15

Water-tank controlling device. *plans Power* 41:680 My 18 '15; *Same. Eng & Min J* 99:805 My 22 '15; *Same. Eng & Contr* 44:860 N 3 '15

**Water gas. See Gas, Water****Water gates. See Floodgates****Water hammer**

Causes and prevention of water hammer. *Elec W* 65:1686 Je 19 '15

Draft-tube water-hammer. J. B. Crane. *diag Power* 41:789-90 Je 8 '15

Temperature change or water hammer—which? W. Roberts. *diag Power* 42:687 N 9 '15

**Water heaters**

Explosion of a small hot water heater in a garage. *Il Locomotive* 30:170-2 Ap '15

Hotstream gasoline water heater. *Il Dom Png* 72:350 S 13 '15

Range boiler water heater. *Il Metal Work* 84:224 Ag 13 '15

*See also* Electric water heaters; Feed water heaters; Gas water heaters; Hot water supply

**Water heating**

*See also* Feed water heating; Hot water supply; Water heaters

**Water hemlock (cicuta)**

Cicutoxin; the poisonous principle in water hemlock (cicuta). C. A. Jacobson. *Il Am Chem Soc J* 37:916-34 Ap '15

**Water hyacinth**

Removing and utilizing the water hyacinth. *Eng N* 73:905 My 6 '15

**Water in organic compounds**

Qualitative test for water by the use of the acetylene-cuprous chloride reaction. E. R. Weaver. *Am Chem Soc J* 36:2462-8 D '14

**Water laws and legislation**

Recent legislation for water conservation reviewed and criticised. M. Knowles. *Eng Rec* 72:488-9 O 16 '15

*See also* Water pollution; Water rights

**Water mains. See Water pipes****Water measurement**

Electric well-sounding instrument. L. W. Stocker. *diags Eng N* 73:444-6 Mr 4 '15

Liquid weigher improved. J. W. Loef. *diags Power* 41:687-8 My 13 '15

Measuring devices for irrigation water tested at the Davis Field laboratory, University of California. *diags Eng & Contr* 43:243-53 Mr 17 '15

Measuring well-water levels under difficulties. H. W. Keith. *diags Eng N* 74:1037 N 25 '15

*See also* Water flow; Water gages; Water meters; Weirs

**Water meters**

Cincinnati to sell all water by meter in four years. *Eng Rec* 72:254 Ag 28 '15

Clark water meter coupling yoke. *Il Eng & Contr* 44:154 Ag 25 '15

Compound water meter for accurate measurement of large and small flows. *Il Eng & Contr* 43:525-6 Je 9 '15

Considerations to be borne in mind in purchasing water meters. *Eng & Contr* 44:811 O 20 '15

Current meters for measuring flow in pipes. H. P. Boardman. *Eng N* 72:1180 D 10 '14

Curtailment of water waste and selection of meters at Milwaukee water works. *Eng & Contr* 42:176 Ag 19 '14

District heating: velocity steam meters and water meters. S. M. Bushnell and F. B. Orr. *Il diags Heat & Ven* 13:41-3 Mr '15

Experiences in metering the city of Boston. J. A. McMurray. *Eng & Contr* 43:425-6 My 12 '15

Experiences of a city of 6,000 population with water waste, fountains, meters and rates. C. J. Renner. *Eng & Contr* 43:54-6 Ja 20 '15

Improvements in V-notch meter. *Il Power* 41:807 Je 15 '15

Increasing precision in pitometer survey work at Washington, D. C.—meter reading. *Eng & Contr* 43:26 Ja 13 '15

Laboratory for investigating and testing liquid flow meters of large capacity; abstracts. W. S. Giele. *Il diag Am Soc M E J* 37:165-9 Mr '15; *Power* 41:69-71 Ja 12 '15; *Discussion. Am Soc M E J* 37:169-70 Mr '15

Measurements for the household. *Il U S Bur Stand Circ* 55:102-7 '15

Measuring boiler feed water. *diag Elec Ry J* 46:284 Ag 14 '15

Meter for recording flow over weirs. *Il Iron Age* 96:307 Ag 5 '15

Meter maintenance systematized by water-works department in Milwaukee. *Il Eng Rec* 71:587-8 My 9 '15

Meterage at Pasadena, California. *Eng & Contr* 44:359-60 N 3 '15

Meters set in 1914; tabulation. *Munic J* 33:554-7 Ag 22 '15

Notes on meterage from various cities. *Eng & Contr* 42:209-10 Ag 28 '14

Oscillating piston water meter. *Il Eng & Contr* 44:96-7 Ag 4 '15

Ownership of meters. *Am Water Works Assn J* 2:555-58 S '15

Popularizing the water meter at Columbus, O. *Eng & Contr* 44:243-4 S 29 '15

Power of municipalities owning waterworks to compel consumers to install and pay for water meters—court decisions. J. Simpson. *Munic J* 37:920-1 D 24 '14

Pros and cons of private ownership of water meters. *Eng & Contr* 44:81-2 Ag 4 '15

Question box: Do water meters increase or decrease cost of water supply to consumers? *Am Water Works Assn J* 1:637-8 D '14

Question box: How is the cost of installation and maintenance of meters borne? *Am Water Works Assn J* 1:638-48 D '14

Question box: Over-registration of meters? Should meters register cubic feet or gallons? *Am Water Works Assn J* 1:663-8 D '14

**Water meters—Continued.**

- Question box: Straight line reading meters—are they preferable to clock dial meters? *Am Water Works Assn J* 1:667-62 D '14
- Question box: What is the average life of a water meter? *Am Water Works Assn J* 1:676-7 D '14
- Recording power plant operations. J. C. Smallwood. *Il diag Eng M* 49:313-36 S '15
- Report of committee of American water works association on standard fittings for water meters. *Am Water Works Assn J* 2:283-6 Je '15; Same. *Eng & Contr* 43:522-3 Je 9 '15
- Results of meterage at Columbus, Ohio, with special reference to restriction of waste in lawn sprinkling. J. O'Shaughnessy. *Eng & Contr* 43:190-1 Mr 3 '15
- Shop equipment and motor trucking costs, meter division of Milwaukee water works. *Eng & Contr* 43:334-5 Ap 14 '15
- Specifications governing purchase of water meters of disc type at San Diego, Cal. *Eng & Contr* 42:291 S 23 '14
- Waste prevention by individual meters versus district meters. R. O. Wynne-Roberts. *Am Water Works Assn J* 2:397-400 Ja '15; Same. *Eng & Contr* 44:33-3 JI 14 '15
- Water-meter pits, Milwaukee water-works. *diag Eng N* 73:1082 Je 8 '15
- Water meters in La Grange, Ga. G. H. Sargent. *Munic J* 39:223 Ag 12 '15
- When is a meter a meter and when not a meter. A. W. Burgess. *Dom Eng* 73:78-9 O 16 '15
- See also* Pitometer; Venturi meters; Water measurement

**Repair**

- Question box: Is it better to maintain a meter repair department, or send meters to the manufacturers? *Am Water Works Assn J* 1:678-9 D '14

**Testing**

- Clark water meter tester. *Il Eng & Contr* 44:154 Ag 25 '15
- New rating flume for current meters, Bureau of standards. *Il Eng N* 73:1127 Je 10 '15
- Refinements in water meter testing in New York city. F. B. Nelson. *Eng & Contr* 44:339 O 27 '15
- Testing large water meters. *Il diag Eng N* 74:654 S 30 '15

**Water pipes**

- Allowable leakage from cast iron water mains; abstracts. E. C. Bradbury. *Eng & Contr* 42:499-500 N 25 '14; *Eng Rec* 70:330-1 S 19 '14; *Eng N* 72:785 O 8 '14; *Munic J* 38:251-2 F 25 '15
- Argument for the ownership of water services by the utility. M. L. Cooke. *Eng & Contr* 44:386-7 N 17 '15
- Bowl outlets reduce velocities at pipe-line ends. *Il diag Eng Rec* 72:41 JI 10 '15
- Cast-iron pipe makes good record in Galveston storm. A. T. Dickey. *Il Eng Rec* 72:607 N 13 '15
- Covering protects large penstocks from freezing; cement-mortar coating supported by special steel frame around pipe and reinforced with wire mesh. H. G. Huber. *Il diag Eng Rec* 71:269 F 27 '15
- Data and discussion on leakage from cast iron water mains. J. W. Ivy. *Eng & Contr* 43:568-9 Je 30 '15
- Data on the life of wooden pipe pertaining to 79 pipe lines. D. C. Henny. tables *Eng & Contr* 44:127-30 Ag 18 '15; Same. *Eng N* 74:400-3 Ag 26 '15; Excerpt. *Eng Rec* 72:162 Ag 7 '15; Excerpt. *Eng & Min J* 100:476 S 18 '15
- Economic considerations justify wood-stave pipe for water-power penstocks; comparison with steel. R. E. Horton. *Eng Rec* 71:356-3 Mr 20 '15
- Experiences with leadite for jointing cast iron water mains. H. A. Symonds. *Eng & Contr* 44:247-8 S 29 '15
- Experiences with machine banded wooden water pipe in New Hampshire; abstracts. A. W. Dudley. *Il Eng & Contr* 44:225-4 S 22 '15; *Munic J* 39:471-2 S 23 '15

- Field and office methods in connection with the laying and repair of large water mains at San Diego, Calif. W. W. Albin. *Eng & Contr* 43:26-7 Ja 13 '15
- Flexible bronze tubing of the Partridge Island pipe line. *Il diag map Eng N* 73:1167-8 Je 17 '15; Same cond. *Am Gas Light J* 103:42 JI 19 '15
- 48-inch cast iron force main for Atlantic City, New Jersey. L. Van Glider. *Il Am Water Works Assn J* 1:704-8 D '14; Same. *Eng & Contr* 43:77 Ja 27 '15
- Good practice in pipe line construction for high-head hydroelectric plants. J. F. Jollyman. *Eng & Contr* 44:180-1 S 8 '15
- How to make good joints in cast iron water mains with leadite. W. C. Hawley. *Eng & Contr* 44:200-2 S 15 '15; Same cond. (Experiences in calking joints of water mains) *Eng Rec* 72:326 S 11 '15
- Joint details in high-head pipe lines—data on pipe lines throughout the world. L. C. Frohrie. *Il Eng & Contr* 44:77-8 JI 28 '15
- Locating pipes on water system. C. E. Davis. *Metal Work* 84:78-9 JI 15 '15
- Longer cast-iron pipe. *Eng N* 73:898-9 My 6 '15
- Lowering mains under pressure and cost of laying water mains at San Diego. *Il Eng & Contr* 42:419-20 O 23 '14
- Method and cost of constructing a 6-mile water main, of 3-in. screwed pipe, for New Orleans Lake Shore land co. A. M. Shaw. *Eng & Contr* 43:222 Mr 10 '15
- Method of protecting water lines from freezing. *diag Elec W* 66:920 O 23 '15
- Opening headgate causes penstock surges. W. D. Spengler. plan *Eng N* 74:507 S 9 '15
- Penstock carries 5,412-ft. head. *diag Eng N* 74:822 O 23 '15
- Practical procedure in designing steel penstocks. V. P. Marran. *Il diag Eng Rec* 71:355-6 Mr 20 '15
- Protecting water mains from frost. *Il Metal Work* 84:101 JI 23 '15
- Question box: Experience with lead or tin lined iron pipe; comparative efficiency, life and cost? *Am Water Works Assn J* 1:648-50 D '14
- Recording the locations of water-main gate valves. map *Eng N* 73:892-3 My 6 '15
- Records of service of cast-iron water pipe. *Il Eng N* 73:487 Mr 11 '15
- Rochester, N. Y., effects saving by using odd-diameter pipe. *Eng Rec* 73:393-4 S 25 '15
- Service pipes. *Am Water Works Assn J* 2:550-3 S '15
- Subaqueous pipe taken up and replaced 3 feet lower. E. M. Blake. *Eng Rec* 72:69-70 JI 17 '15
- Water supply main for Atlantic City, N. J. *Il Munic Eng* 47:445-7 D '14
- Water-works service pipes. *Eng N* 72:1185-6 D 3 '14
- See also* Aqueducts; Hot water heating; Pipe joints; Pipe laying; Pipes; Siphons; Thawing; Water flow; Water hammer; Water waste; Waterworks

**Cleaning**

- Cleaning a city's water mains. J. F. Springer. *Il Sci Am* 112:88 Ja 23 '15
- Cleaning a water-supply main at Merced, Calif. *Il Eng N* 74:155 JI 22 '15
- Cleaning of water mains. J. F. Springer. *Il Munic Eng* 48:2-7 Ja '15
- Notes on scraping a 15in. trunk main at Batley; abstract. J. C. Barrowclough. *Engineer* 118:588 D 13 '14

**Cost**

- Costs of 12- and 16-ft. lengths of cast-iron pipe laid. F. C. Roberts. *Eng N* 74:641 S 30 '15
- Data on comparative cost of maintaining and renewing wooden and steel pipe at Seattle. L. E. Youngs. *Eng & Contr* 44:178-9 S 8 '15
- Economy of large water mains with table of comparative cost per foot for different water pipe sizes. N. S. Hill. *Eng & Contr* 48:374 Ap 28 '15
- Waterworks practices and costs. *Munic J* 39:148 JI 29 '15



## Water pipes—Continued

## Failures

- Causes of breaks in large water mains in Chicago. C. E. Fitch. diag Eng & Contr 42:416-19 O 28 '14
- Failure of 60-in. water main at Cincinnati by longitudinal compression. J. W. Alvord. diag plan Eng & Contr 43:148-50 F 17 '15; Same cond. Eng Rec 71:588-9 My 8 '15; Excerpt. Eng N 73:407-8 F 25 '15
- Forty-eight inch cast-iron pipe breaks in New York. II Eng Rec 71:757-8 Je 12 '15
- 48-in. water-main break. II Eng N 73:1148 Je 10 '15
- Impact of street cars breaks large water main. II Eng Rec 71:183 F 6 '15
- Misnap to Seattle municipal plant. II Elec W 65:902-3 Ap 10 '15
- New theory of cast-iron water main breaks. F. M. Aguirre. diag Eng Rec 72:116 JI 24 '15
- New theory of cast-iron water main breaks. H. J. Welterhauser. Eng Rec 72:86 JI 17 '15
- Penstock breaks cripple Seattle power plant. II Eng Rec 71:471 Ap 10 '15
- Pipe joint fails by pulling out at elbow. II Eng Rec 72:390 S 25 '15
- Sixty-seven breaks in a cast-iron water main. C. E. Davis. map Eng N 74:244-5 Ag 5 '15
- Surface warnings of street subsurface failures. R. Klotz. Eng N 74:831 O 28 '15
- Vacuum wrecks pipe line. II Metal Work 84:217 Ag 13 '15

## Leakage

## See Water waste

## Repair

- Diver repairs parted intake line at Evanston. Eng Rec 72:49 JI 10 '15
- Five 4-foot water mains underpinned after break. diag Eng Rec 72:7-8 JI 3 '15
- Laying and repairing water mains. W. W. Albin. Metal Work 84:103 JI 23 '15
- Methods employed in repairing a submerged water main at Edmonton, Alberta. J. Hamilton. diag Eng & Contr 44:387 N 17 '15
- Repairing a split water main. II Eng N 74:847 O 28 '15
- Repairing leaks in flexible jointed water main in 40 ft. of water, Galveston harbor, Texas. N. T. Blackburn. diag Eng & Contr 42:163-4 Ag 12 '14
- Utilizing hydraulic principles to locate a leak in a submerged pipe. El G. Hooper. Eng & Contr 44:261-2 O 6 '15

## Testing

- Pressure test shows little leakage from huge molded concrete pipe. II Eng Rec 72:537-8 O 30 '15

- Testing water-main flow. R. C. Hardman. Eng N 74:848 O 28 '15

## Water pollution

- Buffalo sewage disposal and water-supply in relation to the pollution of the Great Lakes. Eng N 73:8-9 Ja 7 '15
- Contamination of a drinking and railroad water supply by sea water and the removal of the salt water from the reservoir. J. R. Downes. Am Water Works Assn J 1:709-14 D '14
- Court forbids river pollution by filter wash-water. Eng Rec 72:160-1 Ag 7 '15
- Establishing and enforcing a British standard for sewage effluents. Eng N 72:1325 D 31 '14
- Good water for farm homes. Sci Am S 80:57 JI 24 '15
- Leaky check valve between public and contaminated industrial water supplies at Circleville, O., causes typhoid outbreak. W. H. Dittoe and F. G. Boudreau. Eng & Contr 43:177 Ag 19 '14
- Legal decision in a water supply pollution case. J. W. Ackerman. Am Water Works Assn J 1:688-98 D '14
- New Jersey supreme court upholds decision awarding damages for illness contracted from drinking impure water supply. Eng & Contr 48:422-4 My 12 '15
- Pollution of California water supply wells by discharges from sewage wells. C. G. Hyde. Eng & Contr 44:340 O 27 '15

- Pollution of public water supplies through connections to industrial supplies. L. H. Van Buskirk. Eng & Contr 43:219-22 Mr 10 '15
- Pollution of rivers. II Munic J 39:75-6 JI 15 '15
- Surface drainage a controlling factor in stream pollution. G. H. Norton. Eng & Contr 44:327-8 O 27 '15
- Treatment of District of Columbia sewage. A. E. Phillips. Eng Rec 72:506 O 23 '15
- Troubles from abnormally high coloring in Rhode Island water supplies. S. D. Gage. Eng & Contr 44:356-7 N 3 '15
- U. S. public health service. H. P. Letton. Munic J 38:220 F 18 '15
- Water analysis and the nitrogen content of water. W. M. Booth. Am Water Works Assn J 2:61-4 Mr '15
- Water-borne typhoid fever epidemic at Healdsburg, Cal. W. A. Sawyer. Eng & Contr 44:179-80 S 8 '15
- Water pollution enjoined at Niagara Falls. Eng N 74:232 JI 29 '15
- Water-typhoid suit lost. Eng N 74:681-2 S 30 '15

## See also Sewage; Water purification; Water supply

## Water power

- Business engineering problem in water power development with the solution for a specific case. W. V. N. Powelson. Eng & Contr 43:222-6 Mr 10 '15
- Comparative water power resources and utilization of European countries, Canada and the United States. Eng & Contr 43:156 F 17 '15
- Conditions that will encourage hydroelectric development. J. A. Britton. Elec W 64:1236-8 D 28 '14
- Damages for loss of water power; abstracts. F. W. Dean. Am Soc M E J 37:174-6 Mr '15; Power 40:903 D 22 '14
- See also Dams; Flumes; Hydraulic engineering; Hydraulic machinery; Hydroelectric plants

## Alabama

- Future of water-power development in Alabama. T. W. Martin. Elec R & W Elec'n 67:850-1 N 6 '15

## California

- California agreement on water power development of national forests. Power 40:867-8 D 15 '14

## Canada

- Canadian hydraulic power. C. H. Mitchell. Power 42:596-7 O 26 '15

## Idaho

- Water power and its relation to irrigation in southern Idaho. J. C. Beebe. II Assn Eng Soc J 54:63-78 F '15

## Illinois

- Report on water-power development on the Chicago drainage canal. Eng N 72:1139 D 3 '14

## New England

- Water powers of New England. H. I. Harri-man. II Gen Elec R 18:358-65 My '15; Abstract. Elec W 65:761-2 Mr 20 '15

## Norway

- Norwegian waterfall concessions. Power 41:781 Je 8 '15
- Water powers in Norway; abstract. Elec W 66:986 O 30 '15

## Russia

- Russia's power resources; extensive water falls and peat deposits await exploitation. maps Eng M 49:909-12 S '15

## Switzerland

- Water-powers of Switzerland. Elec W 66:250 JI 31 '15

## United States

- Bill to open the way for water-power development. Eng N 73:131-2 Ja 21 '15
- Census of primary power equipment. Eng Rec 71:186 Ja 30 '15

**Water power—United States—Continued**

- Development of water power on public lands. Eng Rec 71:75-8 Ja 16 '15
- Failure of water-power legislation. H. L. Cooper. Elec W 65:700 Mr 13 '15
- Federal and state control of water-power: California and Oregon. L. Lundgren. Il Elec W 66:336-8 Ag 14 '15; Same cond. Power 42: 157-8 Ag 3 '15; Same cond. Eng N 74:600-1 S 23 '15
- Ferris bill at water power conference assailed. Eng Rec 72:429-4 O 2 '15
- Intermittent waterfall; using the power of Niagara falls without impairing its scenic beauty. E. Dunn. Il Sci Am 113:492-3+ D 4 '15
- Irretrievable waste of conservation. Elec W 66:511-12 S 4 '15
- Merging hydro-electric interests. Power 41: 681-2 My 13 '15
- National conservation and water powers. H. H. Chapman. Il Am For 21:981-6 O '15
- No federal curb on western power development. O. C. Merrill. Eng N 74:373-5 N 4 '15
- Obstructive legislation: attempting to defeat the Ferris water-power bill. Power 41:123-30 Ja 26 '15
- Senate committee told water-power bill would retard development. Elec W 65:54-7 Ja 2 '15
- Testimony of Mr. Sidney Z. Mitchell on the water-power bill. Elec W 65:187-9 Ja 16 '15
- Testimony on water-power bill. G. Pinchot; P. M. Lincoln. Elec W 65:131 Ja 9 '15
- Water-power bills before Congress. Power 41: 72-3 Ja 12 '15
- Water-power legislation: Adamson and Ferris bills. Power 41:57-8 Ja 12 '15
- Water-power utilization in the West considered by governors. Elec R & W Elec'n 67:482-3 S 11 '15
- Western conference on state control of water-power. Elec W 66:682, 734-8 S 25-O 2 '15
- Western water-power conference favors state rights. Power 42:531 O 12 '15
- West's water powers. Eng Rec 72:405 O 2 '15
- Water power electric plants. See Hydroelectric plants
- Water pressure**
- German studies of uplift pressure on masonry dams. R. Schaefer. diag Eng & Contr 44: 218-31 S 22 '15
- Percolation and upward pressure of water; abstract. W. A. Mitchell. Am Soc M E J 37:121-2 F '15
- Water purification**
- Air-bound filters. R. S. Weston; J. W. Ellms. Eng Rec 72:458 O 9 '15
- Air-bound filters the chief difficulty in operating Wilmington's water purification plant. E. M. Hoopes, jr. Il plans Eng Rec 72:282-4 S 4 '15
- Akron's water purification plant. diag Munic J 38:725-8 My 27 '15
- Automatic liquid-chlorine water disinfecting plant at Stamford, Conn. J. A. Newlands. Il Eng N 73:1158-9 Je 17 '15
- Bubbly creek filter plant adopts liquid chlorine treatment. C. A. Jennings. Am Water Works Assn J 2:401-3 Je '15; Same. Eng N 73:555 Mr 18 '15; Same. Eng Rec 71:338 Mr 13 '15
- Camp engineering—water purification. Sci Am S 73:383 Je 12 '15
- Cincinnati plant has eliminated water-borne typhoid. Eng Rec 72:336 S 11 '15
- Circulating water screens. H. Addison. diag Engineer 120:202 Ag 27 '15
- Collapsible hypo plant packed in a trunk. Il diag Eng Rec 71:378 Mr 20 '15
- Columbus waterworks makes its own alum—a revolutionary step in water purification practice. C. P. Hoover. Il plan Eng Rec 71: 576-7 My 8 '15; Same. Eng & Contr 43:448-9 My 19 '15
- Contributions of the chemist to the potable water industry. W. P. Mason. J Ind & Eng Chem 7:289-90 Ap '15
- Cost and efficiency data on water purification at Erie, Pa., during early months of operation. Eng & Contr 44:160-1 S 1 '15
- Design features of the Montebello water filters, Baltimore, Md. Il Eng & Contr 44:158-9 S 15 '15
- Development of ultra-violet water disinfection. Il diag Eng N 74:634-6 S 30 '15
- Disinfecting large public water supplies. T. Horton. Metal Work 84:40-1 Jl 9 '15
- Disinfecting Sacramento's water supply—temporary plant for introducing chlorine gas. Il Munic J 38:564 Ap 22 '15
- Dry-feed apparatus solves Itasca's coagulant problem. H. N. Ogden. Il plan Eng Rec 71: 686-7 My 8 '15
- Dry feed of chemicals in water purification. V. F. Monfort. Am Water Works Assn J 2:200-5 Mr '15; Discussion. 2:315-16 Je '15
- Effect of filtration and sterilization on typhoid fever in Philadelphia. F. D. West. Munic J 39:111-12 Jl 23 '15
- Efficiency of the liquid chlorine sterilization plant at Wakefield, Mass.; abstracts. E. C. Sherman. Il Eng & Contr 44:410 N 24 '15; Munic J 39:811 N 26 '15
- Excess lime method of water purification. Engineer 120:128 Ag 6 '15
- Household water sterilization with hypochlorite of lime. Eng & Contr 43:572 Je 30 '15
- Hypochlorite treatment at Ludington. G. W. Clark. plan Munic J 38:394 Mr 25 '15
- Kinks in the control of hypochlorite at Denver. W. V. De Berard. Il Am Water Works Assn J 2:442-5 Je '15; Same. Eng Rec 71:393-4 Mr 27 '15
- Liquid chlorine sterilization of the water supply of St. Catharines, Ontario. A. Milne. Il plan Eng & Contr 43:188-90 Mr 3 '15
- Marysville, Kan., filters handle excessively turbid water. C. C. Young. Eng Rec 73:290-1 S 4 '15
- New water filtration plant at Quincy, Ill. W. R. Gelston. Il diag Am Water Works Assn J 2:446-52 Je '15; Same. Munic Eng 48: 297-8 My '15; Discussion. Am Water Works Assn J 2:452-4 Je '15
- Novel, simple method of applying liquid chlorine under pressure. J. W. Ledoux. Eng & Contr 43:519 Je 9 '15
- Observations of some European water purification and sewage disposal plants. E. Bartow. Il Am Water Works Assn J 2:13-24 Mr '15
- Operations of the Cincinnati water-filtration plant for 1914. J. W. Ellms. Il Eng N 73: 854-6 My 6 '15
- Ozone treatment for drinking water. Il Engineer 120:371 O 15 '15
- Prevention of weed growth in water supply reservoir by coppering. Eng & Contr 43:572 Je 30 '15
- Production and application of ultra-violet rays, particularly for water purification. M. von Recklinghausen. Il diag Assn Eng Soc J 54:101-9 Mr '15
- Purification of water by the ultra-violet rays. M. von Recklinghausen. Il diag Am Water Works Assn J 1:565-84 S '14; Same. Sci Am S 79:10-12 Ja 2 '15; Discussion. Am Water Works Assn J 1:585-8 S '14
- Purifying drinking water on the field. Sci Am S 80:288 O 30 '15
- Relative efficiency of liquid chlorine and hypochlorite of lime. F. E. Hale. Eng & Contr 43:173-4 F 24 '15
- Rotary screens remove macro-organisms from Denver's lake water supply. Il Eng Rec 72: 291-2 S 4 '15
- Senfrot chemical injector. diag J Ind & Eng Chem 7:354 Ap '15
- Seven years' successful operation of double sand filtration plant at South Norwalk, Conn., in removal of objectional tastes and odors. H. W. Clark. Eng & Contr 44:262-3 O 6 '15
- Small waterworks revamped under service; rapid sand filters and new pumping station constructed at Painesville, Ohio. G. W. Knight and R. F. MacDowell. plan Eng Rec 72:287-8 S 4 '15
- Sterilization of water by ultra-violet rays of the mercury-vapor quartz lamp. M. von Recklinghausen. diag Am Inst E E Pro 33: 1049-62 Je '14; Same cond. Eng M 47:756-8 Ag '14; Abstract and discussion. Elec R & W Elec'n 65:38-4 Jl 4 '14; Discussion. Am Inst E E Pro 33:1906-12 D '14
- Sterilization of water-supplies for troops on active service. G. S. Woodhead. Sci Am S 79:292-3 My 8 '15

**Water purification—Continued.**

Sterilizing water with ultra-violet light; abstract. *diag Elec W* 66:820 O 9 '15

Ultra-violet rays and their application for the sterilization of water. M. von Recklinghausen. *II diag J Fr Inst* 178:681-704 D '14

Uniformity in compiling and reporting statistics of water purification plants. *Eng & Contr* 42:332-3 O 7 '14

Use of copper sulfate in the purification of swimming pools. S. J. Thomas. *J Ind & Eng Chem* 7:486-9 Je '15

Use of liquid chlorine at Buffalo water-works intake. H. F. Wagner. *II plan Eng N* 73:856-7 My 6 '15

Variations in practice disclosed by water sterilization statistics; status of hypochlorite and liquid chlorine methods of treatment. F. F. Longley. *Eng Rec* 71:291-2 Mr 6 '15; Summary. *Eng N* 73:459 Mr 4 '15

Water borne typhoid in Sacramento, Cal.—interesting application of liquid chlorine. N. E. Williamson. *Eng & Contr* 44:314 O 20 '15

Water coagulation, sedimentation and aeration plant at Norristown, Penn. S. C. Corson. *II diag Eng N* 73:853 My 6 '15

Water-disinfecting outfit for field use. *II Eng & Min J* 99:533 Mr 20 '15

Water purification in Columbus, Ohio. C. P. Hoover. *Munic Eng* 49:101-2 S '15

Water-purification results at Cincinnati in 1914. J. W. Ellma. *Eng N* 73:964 My 20 '15

Water sedimentation, coagulation and mechanical filtration at Waco, Texas. *II Eng N* 72:1162-3 D 10 '14

Water-supply and typhoid fever at Cumberland, Md. A. C. Fowler and M. J. Colton. *II Eng N* 73:969-70 My 20 '15

Water supply treatment at Council Grove, Kansas. L. L. Tribus. *II diag Am Water Works Assn J* 2:89-102 Mr '15

Whipping chemicals into a colloidal water increases efficiency. *II plans Eng Rec* 72:292-3 S 4 '15

*See also* Feed water purification; Filters and filtration; Oil separators; Water—Bacteriology; Water aeration; Water softening; Water supply

**Water rates**

Ashland, Wis., water-rate decisions explained. W. E. Miller. *Eng Rec* 71:806-7 Je 26 '15

Birmingham, Ala., water-rate agreement. *Eng N* 73:552-3 Mr 18 '15

Charges for London water. *Engineer* 119:298 Mr 26 '15

Commission revises water rates in Leavenworth, Kan. *Eng N* 74:217 JI 29 '15

Example of direct competition between publicly and privately owned water works plants in Tarentum, Pa. L. Hudson. *Eng & Contr* 44:162-3 S 1 '15

Experiences of a city of 6,000 population with water waste, famines, meters and rates. C. J. Renner. *Eng & Contr* 43:54-6 Ja 20 '15

Making of water meter rate schedules. *Eng & Contr* 43:191-3 Mr 3 '15

Regulation of water rates, Pocatello, Idaho. *Munic Eng* 47:457-8 D '14

Water-works charges and depreciation at Fargo. *Eng N* 73:994-5 My 20 '15

**Water rights**

Appraisal of water right values. H. P. Gillette. *Eng & Contr* 44:157-8 S 1 '15

California agreement on water power development of national forests. *Power* 40:867-8 D 15 '14

Water-power bills before Congress. *Power* 41:72-3 Ja 12 '15

Water-power legislation: Adamson and Ferris bills. *Power* 41:57-8 Ja 12 '15

What an engineer should know about water rights. M. Bien. *Eng & Contr* 43:412-14 My 5 '15

*See also* Water supply

**Water softening**

Bartlett-Graver water softener. *II Colliery* 35:842 Ja '15

Method of softening and purifying feed water used by a Brooklyn company. *diag Elec W* 66:413-14 Ag 21 '15

Six years of softened and purified water at McKeesport, Pa. E. C. Trax. *Eng & Contr* 44:187-8 Ag 25 '15

Softening plant converts hard, impure river water into boiler feed supply. *II Eng Rec* 72:622-4 N 20 '15

Value of permutized water for processing yarns. A. R. Calvo. *Textile World* 49:343-4+ My '15

Water softener effects economy in central-station plant. *Elec R & W Elec'n* 67:207-8 JI 31 '15

Water softener in feed-water treatment. H. R. Dorman. *II Power* 42:246-8 Ag 17 '15

*See also* Water purification

**Water stills. See Distillation****Water storage**

Decoloration of stored water is due to bleaching by sunlight and oxidation. R. H. Stearns. *Eng Rec* 72:318-19 S 11 '15

**Water supply**

Biochemical and engineering aspects of sanitary water supply. G. W. Fuller. *J Fr Inst* 180:17-61 JI '15

Cooled drinking water. R. F. Massa. *Am Water Works Assn J* 2:422-33 Je '15; Abstract. *Eng M* 49:916-17 S '15

Ground water supplies. W. S. Johnson. *II diag Boston Soc C E J* 2:169-89 My '15; Same cond. *Eng & Contr* 44:29-31 JI 14 '15

Growing value of ground water supplies. L. J. Le Conte. *Am Water Works Assn J* 1:715-16 D '14

Problems in power-plant design. (Engineers' study course) C. L. Hubbard. *Power* 40:931-2; 41:32-4 D 29 '14-Ja 5 '15

Stripping water-works reservoirs. F. P. Stearns. *Eng N* 74:302-5 Ag 12 '15

Study of a water supply by pumping for concrete road construction. *plan Eng & Contr* 43:467-8 My 26 '15

Unique water-supply of Newark, N. J. *II Eng N* 73:863-5 My 6 '15

*See also* Aqueducts; Artesian wells; Catskill aqueduct; Cisterns; Dams; Drinking fountains; Electric plants—Water supply; Feed water; Filters and filtration; Fire service; Hot water supply; Hydrants; Irrigation; Plumbing; Pumping stations; Pumps; Railroads—Water supply; Reservoirs; Snow surveys; Standpipes; Surge tanks; Water; Water companies; Water meters; Water pollution; Water purification; Water rights; Water supply engineering; Water tanks; Water towers; Waterworks; Wells; also names of cities, subhead Water supply

**Cost**

Question box: What it costs per consumer to read meter, make out bill, deliver bill and collect bill? *Am Water Works Assn J* 1:675-6 D '14

*See also* Water pipes—Cost

**Rates**

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**Argentina**

Water supply and drainage in Argentina. A. Dale. *II Metal Work* 34:103-6 JI 23 '15

**California**

Sanitary features of the Los Angeles aqueduct. E. O. Slater. *map J Ind & Eng Chem* 7:622-5 JI '15

**Hawaiian Islands**

Potable water supplies of the Hawaiian Islands. S. W. Tay. *Munic J* 38:104 Ja 28 '15

**Illinois**

Improved water from deep wells in northern Illinois. C. B. Williams. *Am Water Works Assn J* 2:410-15 Je '15; Same. *Munic Eng* 48:306-7 My '15

**Iowa**

Representative Iowa water supplies. J. H. Dunlap. *Eng & Contr* 43:76-7 Ja 27 '15

**Kansas**

State supervision of public water-supplies in Kansas. F. R. Hesser. *Eng N* 74:546-7 S 16 '15

## Water supply—Continued.

## Massachusetts

Water-supplies and health in Massachusetts. A. L. Gammage. Eng N 74:1077-9 D 2 '15

## Montana

Chemical standards for the hygienic purity of public water supplies in Montana. W. M. Cobleigh. Eng & Contr 42:178 Ag 19 '14

## New York

Yonkers water supply and its future development. D. F. Fulton. map Am Water Works Assn J 2:1-8 Mr '15; Discussion. 2:8-12, 311-18 Mr, Je '15

## Panama

Contamination of a drinking and railroad water supply by sea water and the removal of the salt water from the reservoir. J. R. Downes. Am Water Works Assn J 1:709-14 D '14

## Texas

Meeting water-supply shortage at Henrietta, Tex. T. L. Fountain. Eng N 73:1129 Je 10 '15

Water supply of Longview, Texas. P. E. Green. Am Water Works Assn J 2:416-21 Je '15

## Washington, D. C.

Relations between the water supply and typhoid fever in Washington, D. C. J. Gaub. Am Water Works Assn J 1:727-33 D '14

## Water supply, Rural

Unsatisfactory water supply system in a country house. plan Dom Eng 72:320-1 S 11 '15

Water supply and sewage disposal. Metal Work 84:398 S 24 '15

Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:194-7, 224-6, 254-6, 284-6, 313 Ag 14-S 11 '15

## Water supply engineering

Addition to Hartford waterworks system augments daily supply by 30,000,000 gallons. II map Eng Rec 72:289-90 S 4 '15

Blast-furnace plant auxiliaries and general arrangement. J. E. Johnson, jr. diag Met & Chem Eng 13:373-7 Je '15

Chicago water works notes. II Munic J 37:918-19 D 24 '14

Chicago's new tunnel and pumping station part of comprehensive waterworks plan. H. S. Baker. map Eng Rec 71:73-4, 103-4 Ja 18-23 '15

Cleveland west side water-supply tunnel. II diags plan Eng N 73:4-8 Ja 7 '15

Conditions encountered and methods employed in laying water pipes in the congested streets of New York city. M. Blatt. Eng & Contr 44:246-7 S 29 '15

Constructing shaft and tunnel at Lake View pumping station, Chicago water works. H. W. Clausen. Eng & Contr 42:500-1 N 25 '14

Construction of Cumberland waterworks. F. H. Eastman. II Eng Rec 71:137-8 Ja 30 '15

Construction of water works tunnels in the Metropolitan water district of Massachusetts. W. E. Foss. II diags map Eng & Contr 42: 84-9, 129-31, 352-5, 451-8 JI 22, Ag 5, O 14, N 11 '14

Construction plant and methods employed on new water works intake tunnel at Milwaukee. II diags plan Eng & Contr 43:352-5, 371-2 Ap 21-23 '15

Costs and special features of the new water supply of Victoria, British Columbia. B. Ehle. II diags Eng Rec 72:406-10 O 2 '15

Curves on Winnipeg aqueduct built with straight sections of forms. diags Eng Rec 72:657-8 N 27 '15

Design and methods and cost of constructing the Los Angeles city trunk line, connecting aqueduct to distribution system. B. A. Heintz. II diags Eng & Contr 43:390-4 My 5 '15

Designing small water works systems. Eng & Contr 42:207-3 Ag 26 '14

Fall River's proposed water supply system. II Atlas Sci Am 113:353-4 O 23 '15

Five 4-foot water mains underpinned after break. diag Eng Rec 72:7-8 JI 3 '15

Hetch Hetchy water supply project. Eng & Contr 43:sup22-3 Mr 31 '15

Installing water service connections at New Orleans. Eng & Contr 42:164-5 Ag 12 '14

Interesting chart of Pittsburgh water system, showing its recent transformation. diag Eng N 73:250-1 F 11 '15

Leakage from Cedar lake reservoir, Seattle water-supply. C. E. Fowler. II map plan Eng N 73:112-15 Ja 21 '15

Lynn waterworks improvement. W. B. Conant. II Munic J 39:651-2 O 23 '15

Method and cost of constructing and repairing submerged water pipe lines at Portland, Ore. D. D. Clarke. diags Eng & Contr 42: 538-42 D 9 '14

New England water-works association 34th annual convention. Eng N 74:566-8 S 16 '15

New England water works association 34th annual convention. Munic J 39:443-6 S 16 '15

New intake tower and tunnel at the St. Louis water works. E. C. Davis. II diags plans Assn Eng Soc J 53:281-300 D '14

Pipe distribution systems; with discussion. N. S. Hill, jr. maps Am Water Works Assn J 2:107-59 Mr '15

Placing the Milwaukee waterworks intake crib. R. E. Stoelting. II diag Eng N 73:1058-9 Je 3 '15

Plan for condensing-water supply for Fall River, Mass. H. S. Knowlton. plan Power 42:643-4 N 9 '15

Progress in water supply. A. Hazen. Eng Rec 71:5-6 Ja 2 '15

Rebuilding the Omaha water-intake cribs. G. T. Prince. II diags Eng N 74:342-4 Ag 19 '15

Relocation and mapping of uncharted portions of water distribution systems. C. E. Davis. Eng & Contr 43:74-5 Ja 27 '15; Same. Munic Eng 48:137-9 F '15; Abstract. Eng N 73: 250 F 11 '15

San Francisco's future water-supply: Hetch Hetchy project. A. J. Cleary. II Eng N 73: 298-301 F 13 '15

Seventy years of civil engineering. II Sci Am 112:527 Je 5 '15

Sooke lake water-supply for Victoria, B. C. C. E. Rust. Eng N 74:396-7 N 18 '15

Ten and three-quarters miles of 36-inch riveted-steel pressure line built on Sooke work. B. Ehle. II plan Eng Rec 72:564-5 N 6 '15

Underflow water-supply at Moline, Kan. W. L. Benham. Eng N 73:925-6 My 13 '15

Unusual water-supply for power plant. F. B. Hays. plan Power 42:684 N 16 '15

Virgin country renders concrete pipe line construction difficult. B. Ehle. II diags plan Eng Rec 72:507-10 O 23 '15

Water-pipe tunnel, Metropolitan water-works. B. Lawrence. II diags Eng N 73:1116-21 Je 10 '15

Water works engineering mistakes. D. H. Maury. Eng & Contr 42:246-7 S 9 '14

Western Australian goldfields: how water supplies are provided. L. E. Shapcott. II Sci Am 111:608-9 D 19 '14

Wilson avenue water tunnel at Chicago. diags plan Eng N 73:764-7 Ap 22 '15

See also Aqueducts; Canals; Dams; Filters and filtration; Hydraulic engineering; Irrigation; Pipe laying; Plumbing; Pumping stations; Pumps; Railroads—Water supply; Siphons; Water conduits; Water flow; Water hammer; Water meters; Water pipes; Water towers; Waterworks; also Catalik aqueduct; Los Angeles aqueduct

## Examinations

Civil-service examination for water-works engineer. Eng N 74:1071 D 2 '15

## Water supply for factories

Cooled drinking water. R. F. Massa. Am Water Works Assn J 2:422-23 Je '15; Abstract. Eng M 49:916-17 S '15

Providing a shop drinking water system S. E. Bunnell. Metal Work 53:595-6 My 1 '15

Test of a mill drinking water system. F. H. Brown. Iron Age 96:110-11 JI 3 '15

**Water supply for factories—Continued**

Two-pressure hydraulic service. A. D. Williams. plan Power 41:871-2 My 18 '15  
Two-pressure hydraulic service. W. Hirst. diag Power 42:23 J 6 '15

**Water tanks**

Controlling the water-supply to a closed tank. B. C. Luce. plan Eng N 74:271 Ag 5 '15  
Municipal water tank bursts under air pressure. W. Chipman. il Eng N 74:860 O 28 '15  
Reinforced-concrete tank of 100,000-gallon capacity designed by use of diagrams. A. R. James. diags Eng Rec 72:185-6 J 31 '15  
Steam coil in water tank. J. E. Noble. diag Power 41:756 Je 1 '15  
Water-tank controlling device. plans Power 41:680 My 18 '15; Same. Eng & Min J 99: 905 My 22 '15; Same. Eng & Contr 44:860 N 3 '15

See also Water towers

**Water towers**

Appearance considered in German water towers. diags Eng Rec 72:48-9 J 10 '15  
Artistic American water tower. C. S. Pillsbury. il Eng Rec 72:174 Ag 7 '15  
Design and construction of the new 500,000-gal. elevated water tank at Appleton, Wis. D. D. Williams. il Eng & Contr 44:120-1, Ag 18 '15  
Railway roadside water tanks for locomotive supply; with comparative costs of wood and steel structures. diag Ry Age 59:955-8 N 19 '15; Abstract. Ry R 57:517-18 O 23 '15  
Stability of unanchored tanks. C. R. Knowles. Ry Age 59:954 N 19 '15  
Wood vs steel water tanks. J. Dupree. Ry R 56:536 Ap 17 '15  
Wooden versus steel water tanks. M. D. Miller. Ry R 57:23-5 J 13 '15

See also Standpipes; Surge tanks; Water tanks

**Water towers, Concrete**

Building concrete silos; with water towers. C. D. Gilbert. il diags Concrete Cem 7:61-2 Ag '15  
Concrete surge tank, disconnected at base, operates on differential principle. il diag Eng Rec 71:368-70 Mr 30 '15  
Duxbury reinforced-concrete water-works tank. il diag Eng N 73:882-3 My 8 '15  
Earthquake-proof concrete tower, San Francisco. Eng N 74:808-9 Ag 12 '15  
Methods and costs in constructing a combined concrete silo and water tank. il diag Concrete Cem 6:162-4 Mr '15  
Reinforced concrete for railway water tanks. J. T. Bowser. Eng Rec 71:81-2 Ja 18 '15  
Reinforced-concrete tower tank at Middleborough, Mass. G. A. Sampson. diags Eng N 74:392-4 Ag 26 '15

**Water-tube boilers. See Boilers, Water-tube****Water waste**

Allowable leakage from cast iron water mains; abstracts. E. C. Bradbury. Eng & Contr 42:499-500 N 25 '14; Eng Rec 70:380-1 S 19 '14; Eng N 72:725 O 8 '14; Munic J 88: 251-2 F 25 '15  
Cost of wasting water. Munic J 39:363-4 S 2 '15  
Data and discussion on leakage from cast iron water mains. J. W. Ivy. Eng & Contr 43:568-9 Je 30 '15  
Data on consumption and cost of water for uses difficult to control if the supply is unmetered. W. F. Sullivan. Eng & Contr 42:310-11 S 30 '14  
Demonstrating the cost of water waste. il Eng N 74:219-20 Ag 12 '15  
Detecting underground leaks—methods employed by numerous cities. Munic J 38:542-3 Ap 22 '15  
Detecting water waste at St. John's, Newfoundland. Munic J 88:103-4 Ja 28 '15  
Economies of water waste in cities. R. O. Wynne-Roberts. Eng & Contr 42:330-2 O 7 '14  
Experiences of a city of 6,000 population with water waste, famines, meters and rates. C. J. Renner. Eng & Contr 43:54-6 Ja 20 '15  
Increasing precision in pitometer survey work at Washington, D. C.—meter reading. Eng & Contr 43:26 Ja 13 '15

Leakage from lead joints; abstracts. A. H. Smith. Munic J 39:470-1 S 23 '15; Eng & Contr 44:313-14 O 20 '15  
Public education on water waste. Munic J 39: 502-3 S 30 '15  
Results of meterage at Columbus, Ohio, with special reference to restriction of waste in lawn sprinkling. J. O'Shaughnessy. Eng & Contr 43:180-1 Mr 3 '15  
St. Louis gives object lessons of water waste. Eng Rec 72:330 S 11 '15  
Saving in the pump room. W. E. Dixon. diag Power 41:171-2 F 2 '15  
Wash water salvage at Champaign and Urbana. H. E. Babbitt. Am Water Works Assn J 2:393-6 Je '15  
Waste prevention by individual meters versus district meters. R. O. Wynne-Roberts. Am Water Works Assn J 2:397-400 Je '15; Same. Eng & Contr 44:32-3 J 14 '15  
Water waste. C. R. Knowles. il Ry Age 59: 756-8 O 22 '15  
Water waste surveys in the District of Columbia. P. Lanham. il Eng & Contr 43:275-6 Mr 24 '15  
Water works statistics for the year 1914; waste prevention. Munic J 38:551-3 Ap 22 '15

See also Seepage; Water meters

**Water wheels**

Analysis of waterwheel-governor effort; abstract. E. D. Searing. Elec W 66:1513-14 Je 12 '15  
Bamboo waterwheel used for Philippine irrigation. J. W. Swaren. il Eng Rec 71:814 Je 26 '15  
Change of runners permits 100 per cent head increase. W. V. N. Powelson. Eng Rec 71: 202 F 13 '15  
Hydraulic turbines; wheels and pumps at the Panama-Pacific exposition. H. J. Kennedy. il Sci Am S 80:124-6 Ag 21 '15  
Impulse wheels for 5000-ft. head, Lac Fully plant; abstract. F. Prasil. diags Eng N 78: 138-9 Ja 21 '15  
Old waterwheel at Troy ran continuously 45 years. E. A. Vivartas. il Eng Rec 71:752 Je 12 '15  
Practice in high-head hydraulic plants; abstract. J. P. Jollyman. Elec W 66:1513 Je 12 '15  
Repair to waterwheel. J. W. Swaren. il Power 41:838 Je 22 '15  
Water motors operate gate-valves in nozzle lines. J. W. Swaren. il Eng Rec 72:134 J 31 '15  
Waterwheel designed for mule-back transportation. il Eng Rec 71:198 F 13 '15

See also Turbines

**Water works. See Waterworks****Waterfowl. See Water birds****Watering-stations**

Street watering-station. F. E. Merrill. diag Eng M 49:274-5 My '15

**Waterproofing**

History of Attleboro, Mass., standpipe of reinforced concrete. il Eng N 73:816-18 Ap 29 '15  
Making concrete tight; Tacoma and Seattle water-works. C. E. Fowler. il Eng N 74: 1076-7 D 2 '15  
Method and cost of waterproofing settling basin bottoms at St. Louis. G. G. Black. Eng & Contr 44:103 Ag 11 '15  
Methods and costs of waterproofing concrete surfaces to decrease disintegration by frost. J. L. Lytel. Eng & Contr 43:346-7 Ap 14 '15  
Methods used to waterproof bridge floors. Eng & Contr 43:399-400 My 5 '15  
Oil-mixed Portland cement concrete. L. W. Page. U S Agric Bul 280:1-26 '15; Abstract. Eng & Contr 44:227-9 S 22 '15; Excerpt. Eng Rec 72:334-5 S 11 '15; Excerpt (Oil-mixed concrete for damp proofing) Munic Eng 48: 375-6 Je '15; Same. Bldg Age 37:24 J 1 '15; Same. Am Gas Light J 105:29 J 12 '15; Same. Concrete Cem 7:30 J 1 '15  
Relining a small bricklined water works reservoir with asphalt and concrete at Irwin, Pa. J. M. Rice. il diags Eng & Contr 43:273-4 Mr 24 '15

**Waterproofing—Continued**

- Repairing and waterproofing the Nashville water-works reservoir. W. W. Southgate. *Il diags Eng N 73:549-52 My 6 '15*
- Test results with concrete waterproofing materials. Eng N 73:125 Ja 21 '15
- Tunnel waterproofing with cement-and-clay mortar. Eng N 73:731-2 Ap 15 '15
- Waterproofing concrete. L. G. Hall. *Sci Am 112:629 Je 26 '15*
- Waterproofing concrete. S. Stone, Jr. *Sci Am 113:291 O 2 '15*
- Waterproofing concrete construction. Ry R 57:91 J1 17 '15
- Waterproofing concrete surfaces. Assn Eng Soc J 54:275-6 Je '15
- Waterproofing concrete surfaces. J. L. Lytel. *Munic Eng 49:106 S '15*
- Waterproofing existing concrete structures. Eng N 73:707 Ap 15 '15
- Waterproofing for concrete. Concrete Cem 7: 57 Ag '15
- Waterproofing solid steel-floor bridges. S. T. Wagner; abstracts. *diags Ry R 56:273-7 F 27 '15; Eng & Contr 43:79-81 Ja 27 '15; Revised specifications. Eng & Contr 44:209-11 S 15 '15; Discussion. A. W. Carpenter. Ry R 56: 557-8 Ap 24 '15*
- Weathering of concrete prevented by waterproofing. Eng Rec 71:486 Ap 17 '15
- See also Corrosion and anti-corrosives*

**Waterproofing of textiles**

- Waterproofing gauze. *Textile World 49:532-3 Ag '15*
- Waterproofing yarns and fabrics. *Textile World 49:368-70 Je '15*

**Watersheds**

- Methods employed in the reforestation of the Croton watersheds. T. C. Culyer. Eng & Contr 44:202 S 15 '15

**Watertown arsenal**

- Abolition of scientific management in government shops. L. W. Moffett. *Il Iron Tr R 56: 963-4 My 13 '15*
- Criminal speeding-up system—and some facts. W. Crozier. *Am Ind 15:30-1 Ja '15*
- Employees' grievance committee. *Iron Age 95: 653 Mr 18 '15*
- Labor union, scientific management and the government. *Ind Eng 15:6 Ja '15*

**Waterways**

- Development of inland water transportation. J. H. Bernhard. Eng Rec 72:332-4 S 11 '15
- Illinois waterway—proposed eight foot channel from Lockport to Utica. map Eng & Contr 43:201 Mr 3 '15
- Inland water transportation. T. G. Dabney; F. Lavis. Eng Rec 72:519-20 O 23 '15
- Rivers and railroads in the United States. W. W. Harts. Ry Age 58:230-1 F 5 '15; Discussion. F. Lavis. Ry R 56:860-2 My 15 '15; Same cond. Ry Age 58:975-6 My 7 '15
- See also Canals; Rivers*

- Waterwheels. *See Water wheels*

**Waterworks**

- African water system. *Metal Work 84:646 N 19 '15*
- American waterworks association 35th annual convention. *Munic J 38:705-8 My 20 '15*
- Bradford waterworks. *Il plan maps Engineer 119:251-4, 278-80 Mr 12-19 '15*
- Chicago's new tunnel and pumping station part of comprehensive waterworks plan. H. S. Baker. map Eng Rec 71:73-4, 103-4 Ja 18-23 '15
- Choice of alloys for water work design. H. Carpenter. *Am Water Works Assn J 2:351-8 Je '15; Same abr. Eng & Contr 43:333-4 Ap 14 '15*
- Cincinnati builds high-pressure fire service system. J. A. Hiller. *Il diags Eng Rec 71:590, My 8 '15*
- Cincinnati water works. J. W. Hill. *diag Am Water Works Assn J 2:42-60 Mr '15*
- Concrete rings, superimposed, sunk to form San Antonio pump pit. W. W. Hay. *Il diag Eng Rec 71:741-2 Je 12 '15*
- Cost and other data on the reconstruction of the Hamilton, Ontario, water works. A. F. Macallum. Eng & Contr 44:312-13 O 20 '15; Same. *Il Munic Eng 49:164-7 N '15*

- Council Bluffs waterworks regeneration reverses slump in population curve. *Il diag Eng Rec 72:286-7 S 4 '15*
- Design features and cost of gravity water works at Mellen, Wis. W. G. Kirchoffer. *Il diags Eng & Contr 44:159-60 S 1 '15*
- Design features of the new water works at South Orange, N. J. *Il Eng & Contr 43:519-20 Je 9 '15*
- Design features of the proposed water supply and purification works, Corpus Christi, Texas. *diags Eng & Contr 42:599-600 D 30 '14*
- Developments in the Marshall, Texas, water works in recent years. B. F. Meyers. *Il Eng & Contr 43:549-50 Je 23 '15*
- East African water system. G. A. Chamberlain. *Metal Work 84:309-1 S 3 '15*
- Electric pumping at Fairmount, Ind.; comparison of service by reciprocating steam pumps and by electrically driven centrifugal pumps. J. A. Randolph. *Munic J 39:356-8 S 2 '15*
- Electrically driven water-works plant. E. M. Ivens. *Il plan Power 42:198-200 Ag 10 '15*
- Electricity for municipal pumping. *Il Elec R & W Elec'n 67:653-6 O 9 '15*
- Electricity in waterworks plants. L. E. Darling. *Elec R & W Elec'n 66:869-71 My 8 '15*
- Erie waterworks improvements. *Il Munic J 39:358-9 S 2 '15*
- Experiences in rebuilding and reinforcing a water works system. O. T. Smith. *Am Water Works Assn J 2:404-6 Je '15*
- How low fixed charges favor centrifugal pumps. G. H. Gibson. *Il plan Eng N 74:886-8 N 4 '15*
- Improving Liberty, N. Y., water supply. H. W. Taylor. *Il Munic J 38:390-1 Mr 25 '15*
- Municipal pumping stations of Detroit. T. Wilson. *Il Power 41:150-3 F 2 '15*
- New waterworks at Madras, plans map Engineer 119:58-9, 78-81 Ja 15-22 '15
- Rapid gate-closing device mounted on motor truck. *Il Eng Rec 70:573-4 N 21 '14; Eng & Contr 42:454 N 11 '14*
- St. Louis water works improvements. *Munic J 39:360-1 S 2 '15*
- San Francisco's auxiliary water-supply for fire protection. A. J. Cleary. *Il plan diags Eng N 73:290-7 F 18 '15*
- Second rebuilding of the water-works of Montrose, Col. P. W. Pinkerton. Eng N 73: 883-4 My 6 '15
- Small waterworks revamped under service; rapid sand filters and new pumping station constructed at Painesville, Ohio. G. W. Knight and R. F. MacDowell. *plan Eng Rec 72:287-8 S 4 '15*
- Standard gate valves of the New York city waterworks. *Il diags Eng N 73:1016-18 My 27 '15*
- Steam-turbine-driven centrifugal pumps of the Toronto water works. *Il Eng & Contr 43:548-9 Je 23 '15*
- Street stop-cock of the Boston water-works department. G. H. Finneran. *diags Eng N 73: 77 Ja 14 '15*
- Turbine-driven water-works plant, Charlotte-town, P. E. I. C. O. Thomas. *Il Power 42: 504-5 O 12 '15*
- Water supply at Wilmington, Delaware. E. M. Hoopes, Jr. and J. M. Caird. *Il Am Water Works Assn J 1:111-34 Mr '14; Same cond. Eng & Contr 42:310-12 Ag 26 '14*
- Water works improvements at Jacksonville, Fla. *Il Eng & Contr 44:178 S 8 '15*
- Water-works improvements at San Diego, Cal. *diags Eng N 73:843 F 18 '15*
- Water works improvements in 1915; tabulation. *Munic Eng 48:266-7 Ap '15*
- Water works of Valparaiso, Ind. E. L. Loomis. *Il Munic Eng 49:9-12 J1 '15*
- Water works plant of River Forest, Illinois. K. M. Mitchell. *Munic Eng 48:101-4 F '15*
- Works for the improved water supply of Columbus, Ga. plans Eng & Contr 42:496-8 N 25 '14
- See also Filters and filtration; Hydrants; Pumping stations; Pumps; Water pipes; Water purification; Water supply; Water supply engineering*

**Waterworks—Continued.****Accounting**

- Elements of water works accounting. diagrs Eng & Contr 42:600-2 D 30 '14  
Field and office methods employed by Louisville water co. in checking construction gang payrolls. G. D. Crain, jr. Eng & Contr 43:102-3 F 3 '15  
Suggestions on accounting for municipally owned water works. C. C. Clothier. Eng & Contr 43:551 Je 23 '15  
Valuation of water works properties. H. P. Gillette. Eng & Contr 43:394-5, 486-8; 44:14-18 My 5, Je 2, Jl 7 '15

**Cost**

- Cost of installing small water works systems in Massachusetts. H. R. Crohurst. II Eng & Contr 43:461-5 My 26 '15  
Cost of pumping stations, pumping machinery and distributing reservoirs in small water works of Massachusetts. W. S. Johnson. Eng & Contr 42:312-13 S 30 '14  
Waterworks practices and costs. Munic J 39:148 Jl 29 '15

**Finance**

- Method of assessing cost of water main extensions by the municipally owned water works of Duluth, Minn. D. A. Reed. Eng & Contr 43:447-8 My 19 '15

**Inspection**

- House to house inspections. A. P. Folwell. Am Water Works Assn J 1:685-7 D '14  
Water waste surveys in the District of Columbia. P. Lanham. II Eng & Contr 43:275-6 Mr 24 '15

**Laboratories**

- Laboratory control of small water supplies. E. Bartow. plans Eng & Contr 43:56-7 Ja 20 '15

**Laws and regulations**

- Features of the Ontario statutes and their administration affecting water supplies and sewerage systems. F. A. Dallyn. Am Water Works Assn J 2:344-50 Je '15  
New water works ordinance adopted by referendum at Fargo, N. D. Eng & Contr 43:396 My 5 '15  
Power of municipalities owning waterworks to compel consumers to install and pay for water meters—court decisions. J. Simpson. Munic J 37:320-1 D 24 '14  
Prescribed water works operating methods in West Virginia. J. K. Anderson. Eng & Contr 44:32-3 Ag 4 '15  
Water-works charges and depreciation at Fargo. Eng N 73:994-5 My 20 '15

**Maintenance and repair**

- Detecting underground leaks—methods employed by numerous cities. Munic J 38:542-3 Ap 23 '15  
Maintenance of the water supply distribution system of New York city. W. W. Brush. II maps Am Water Works Assn J 2:206-37 Mr '15; Same cond. Eng & Contr 44:44-7 Jl 21 '15; Discussion. F. B. Nelson. Am Water Works Assn J 2:306-10 Je '15  
Water and sewer maintenance in New Orleans. Munic J 39:354-6 S 2 '15

**Management**

- Boston municipal water plant derives income from water power. W. B. Conant. II Munic Eng 49:117 S '15  
Bringing order out of chaos in the McAlester, Okla., water department. R. S. Naylor. Eng & Contr 44:18-19 Jl 7 '15  
Comparative cost of collecting water bills by mail and by collectors at Seattle, Wash. Eng & Contr 44:33 Jl 14 '15  
Data on consumption and cost of water for uses difficult to control if the supply is unmetered. W. Sullivan. Eng & Contr 42:310-11 S 30 '14  
Elements of good record keeping by water departments. J. W. Lacy. Eng & Contr 44:178 S 8 '15

- Faulty operation of the average public utility with special reference to water works. N. T. Veatch, jr. Eng & Contr 43:171-3 F 24 '15  
Improvement and standardization of procedure in water works management. G. G. Earl. Eng & Contr 43:569-70 Je 30 '15  
Meter maintenance systematized by water-works department in Milwaukee. II Eng Rec 71:587-8 My 8 '15  
Motor vehicles in water-works service at Los Angeles. B. A. Heinly. Eng N 73:861-3 My 6 '15  
Organization of and procedure in the water department of Pasadena, Calif. Eng & Contr 43:372-4 Ap 23 '15  
Practical value of publicity to the water works man. S. C. Hadden. Am Water Works Assn J 2:359-66; Discussion. D. R. Gwinn. 2:366-70 Je '15  
Provisions governing water main extensions in 135 American cities. Am Water Works Assn J 1:250-9 Je '14; Same. Eng & Contr 42:381-3 O 21 '14  
Springfield water-works. II Eng N 74:406-9, 443-5 Ag 26-S 2 '15  
Standard form of correspondence used in the department of water, San Diego, Calif. Eng & Contr 42:520-1 D 2 '14  
Use of automobiles in water works service at Worcester, Mass. G. W. Batchelder. Eng & Contr 42:333-4 O 7 '14  
Water department methods which limit per capita consumption to 39 gals. daily at Milton, Mass. D. A. Heffernan. Eng & Contr 42:311-12 S 30 '14

See also Water meters; Water waste

**Rates**

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**Regulation**

- Illinois utilities commission and the water works companies. C. G. Bennett. Am Water Works Assn J 2:382-9 Je '15  
Illinois utilities commission has waterworks rules. Eng N 74:885 N 4 '15  
Making water bills a lien on real property. Eng & Contr 42:428-6 N 4 '14  
Michigan supreme court decision in case of Kalamazoo vs. Standard paper co. to recover value of water taken from fire lines for industrial use. Eng & Contr 42:487-9 N 18 '14  
Municipal ownership and operation of water-works: case for state control. M. N. Baker. Eng N 72:1115 D 8 '14  
Prescribed water works operation methods in Missouri. Eng & Contr 44:293-4 O 13 '15  
Regulations governing preparation of reports on water supply systems and extensions in Saskatchewan. Eng & Contr 42:131-2 Ag 5 '14  
Rules for water utility operation in Oregon. Eng & Contr 42:177-8 Ag 19 '14  
State regulation of municipally owned water works in Wisconsin. C. M. Larson. Eng & Contr 43:426-7 My 12 '15  
State regulation of the operation of a small water works in Pennsylvania. Eng & Contr 43:103-4 F 8 '15  
Water filtration hold-up at Ottawa, Ont. Eng N 72:1167 D 10 '14  
Water-works rules issued by Montana commission. Eng N 74:1019 N 25 '15

**Statistics**

- Water works analysis contains data from 5158 towns. Eng Rec 72:13 Jl 8 '15  
Water works statistics for the year 1914. Munic J 38:544-57, 730-1 Ap 22, My 27 '15

**Valuation**

- Acquisition of private water plants by municipalities. B. M. Wagner. bibliog Am Water Works Assn J 2:25-41 Mr '15; Discussion. 2:582-4 S '15  
Economic aspects of water works valuation. R. B. Hellman. Am Water Works Assn J 2:538-43 S '15  
Observations on water works valuation; with discussion. J. W. Ledoux. Eng & Contr 42:556-8 D 16 '14  
Suggestion for water-works valuation. Eng N 72:1271-2 D 24 '14

**Waterworks—Valuation—Continued.**

Valuation of water works properties. H. P. Gillette. Eng & Contr 43:394-5, 486-8; 44:14-18, 80-1, 157-8, 258-61, 356, 424-7 May 5, Je 2, Ji 7, Ag 4, S 1, O 6, N 3, D 1, '15

Water works association, American. See American water works association

**Waterworks associations**

Consolidation of country's waterworks associations urged. G. G. Earl. Eng Rec 71:643 My 22 '15

**Waterworks superintendents**

Choosing a first-class water works superintendent in Massachusetts. Eng & Contr 44:282-3 O 13 '15

Questions asked in examination of applicants for position of water works superintendent at Kalamazoo, Mich. Eng & Contr 44:158-9 S 1 '15

**Watt-hour meters**

Effect of temperature on the accuracy of watt-hour meters. B. E. Miller. Elec W 66:686-7 S 18 '15

Following up watt-hour meter records at El Paso. Il Elec Ry J 46:12-13 Ji 3 '15

Importance of watt-hour-meter maintenance. Elec W 65:1690 Je 26 '15

Induction watt-hour meter. V. L. Hollister. diags Am Inst E E Pro 34:1217-35 Je '15

New-type mercury watt-hour meter. A. A. Radtke. Elec W 65:395-6 F 13 '15

Notes on induction meter design. W. H. Pratt. Il Gen Elec R 18:277-81 Ap '15

Small, direct-current, watt-hour meter. Il Elec R & W Elec'n 66:219 Ja 30 '15

Testing polyphase watt-hour meter. F. R. Innes. diag Elec W 66:927 Ap 10 '15

Watt-hour meter accuracy. D. D. Ewing. Power 41:244-5 F 16 '15

Watt-hour meter method of testing instrument transformers. P. G. Agnew. diags U S Bur Stand Bul 11:347-57 My 10 '15

**Wattmeters**

Machine-tool performance diagnosis: lessons of the power-time characteristic and value of automatic records on analyzing productive operations. Elec W 66:417-18 F 18 '15

Wave lengths. See Spectrum analysis

**Wave motion**

Method for calculating that part of the recoil momentum of a gun which is due to the action of the gases after the projectile leaves the muzzle. W: S. Franklin. J Fr Inst 179:559-77 My '15

**Waves**

Design of shore-protection works. R. Bennett. diags Eng N 74:98-101 Ji 15 '15

Fighting the sea with compressed air. R. G. Skerrett. Il Sci Am 112:97 Ja 30 '15

Ripple marks; a study of water action on the seashore. C. Epry. Il map Sci Am S 80:188-91 S 18 '15

See also Electric waves; Light; Shore protection; Sound; Vibrations

**Wax**

Myrtle wax of commerce. Il Sci Am S 80:301 N 6 '15

**Weather**

Weather influences on mankind. Sci Am 112:624 Je 26 '15

See also Atmospheric pressure; Rain; Storms

**Weaving**

Designs for a basket weave. Il Textile World 49:537 Ag '15

Hand book of weaves. G. H. Oelsner. Il Textile World 48:408-11, 503-6, 586-9; 47:87-9, 280-2, 317-19, 408-12, 504-7, 594-9; 48:122-7, 208-12, 316-21, 400-3, 496-501, 589-93; 49:87-91, 163-7, 337-42 Ja '14-Je '15

Making of Scotch tweeds. T: Welsh. Textile World 48:501-3 F '15

Weaving tubular goods. Il Textile World 49:657-8 S '15

Woven fabric. Il Textile World 50:183 N '15

See also Cotton weaving; Lace; Looms; Silk; Textile industry and fabrics; Woolen and worsted manufacture

**Webster, Arthur Gordon, 1862-**

Sketch. por Eng M 50:211 N '15

**Weed cutters**

Gasoline-operated railway weed mower. Il Sci Am 113:384 O 30 '15

Northern Texas traction weed cutter. R. E. Griffiths. Il Elec Ry J 45:1121 Je 12 '15

**Weeds**

Butternut tree as a weed eradicator. Sci Am 113:130 F 6 '15

Weeks law. See Forestry laws and legislation

**Weighing**

Loss of weight of musk in a current of dry air. C: B. Bazzoni. diag J Fr Inst 180:463-9 O '15

New assay balance. Il Met & Chem Eng 13:512-13 Ag '15

Ore weighing at the Bunker Hill mill, Kellogg, Idaho. Eng & Min J 100:520 S 25 '15

Scheme for weighing coal during stoker trials. diag Elec W 66:695 S 25 '15

Weighing of less than carload freight. E. A. O'Donnell. Ry Age 57:1197-8 D 25 '14

**Weights and measures**

Accuracy of grain weights. F. C. Maegly. Ry Age 58:888-9 Ap 23 '15

Measurements for the household. Il U S Bur Stand Circ 55:1-149 '15; Abstract (Efficiency in the household). H. T. Wade. Sci Am 113:448-9 N 20 '15

Measurements of length and area, including thermal expansion. U S Bur Stand Circ 2:1-21 '15

Measuring of textile fabrics. E. H. Marble. Textile World 49:85-7 Ap '15

Recording weights—calling every weight by its right name. F. C. Maegly. Ry Age 58:270 F 12 '15

Rules for weight of cast-iron pipes. Power 41:425 Mr 30 '15

Search for standard weights and measures of length. Sci Am 112:175 F 20 '15

South American trade, weights and measures. Textile World 49:56-8 Ap '15

Weight of balls or spheres. W. L. Tryon. Foundry 43:356a S '15

See also Electric measurement; Gages; Measuring instruments; Mensuration; Metric system

**Laws and regulations**

Legal weights per bushel for various commodities. U S Bur Stand Circ 55:144-6 '15

Measurements for the household. U S Bur Stand Circ 55:28-30 '15

**Weirs**

Flow over V-notch weirs. H. A. Cozzens, jr. Power 42:714 N 23 '15

Flow over weirs with imperfect contractions. G: J. Davis, jr. diags plan Wis U Bul Eng S 8:77-145 no 2 '14

Inverted weir. H. W. Rettger. diags Eng N 73:72-3 Ja 14 '15

Irrigation weir, measuring rod and discharge card. K. A. Heron. Il diag Eng N 74:257 Ag 5 '15

Large Sutro weir under test. B: D. Moses. Eng N 74:277 Ag 5 '15

Recorder for measuring flow over weirs. Il Ry Age (Mech ed) 39:433 Ag '15; Elec W 66:605-6 S 11 '15

Tests of a proportional weir. Il Eng N 74:1018-19 N 25 '15

Tests of the effect of temperature on weir coefficients. F. G. Switzer. Eng N 73:636 Ap 1 '15

V-notch weir. J: E. Rothwell. Il Eng & Min J 100:142-3 Ji 24 '15

See also Water measurement

**Welding**

Acetylene oil-gas welding outfit. Eng Rec 70:sup279 D 5 '14

Acetylene welding of gas pipe. G: H. Manlove. Il Iron Tr R 56:272-3 F 4 '15; Abstract. Ind Eng 15:57-8 F '15

Autogenous pipe welding. Il Iron Age 95:296-7 F 4 '15

Autogenous soldering or welding of aluminum. Il Mach 21:369-71 Ja '15

Autogenous welding produces strains in metal. S. W. Miller. Eng N 74:805 O 21 '15

Avoiding hard cast iron in oxy-acetylene welding. M. K. Dunham. Mach 21:1004 Ag '15



**Welding—Continued**

- Blacksmith's use of borax and cyanide. Eng & Min J 99:1076 Je 19 '15
- Danger of welding processes as applied to tires and wheels. M. D. Hayes. II Elec Ry J 45:942-4 My 15 '15
- Data on oxy-acetylene welding and cutting equipment. Eng & Contr 43:543-4 Je 15 '15
- Economies of welded pipe connections. II Iron Age 95:1289 Je 10 '15
- Fibre helmet for welders. II Foundry 43:380 S '15
- Flashback in the welding torch. M. K. Dunham. diag Mach 22:50-1 S '15
- Flashback in the welding torch. S. W. Miller. Mach 22:233-4 N '15
- Flue welding. E. J. Haskins. Ry Age (Mech ed) 89:471 S '15
- Fluxes for oxy-acetylene welding. S. W. Miller. II Mach 21:786-9 Je '15
- Fluxes of oxy-acetylene welding. II P. F. Williams; S. W. Miller. Mach 21:1007-8 Ag '15
- Gas-weld rail bonding. J. R. Brown. II Elec Ry J 46:1087-9 N 27 '15
- Gas welding for pipe lines. J. F. Springer. II Munic J 38:254-6 F 25 '15
- Goggles for gas welding and cutting. F. W. King. II Iron Age 95:295 F 4 '15
- High speed steel tipped tools. J. W. Pike. II Ry Age (Mech ed) 89:590 N '15
- High temperature flames in metal working. H. R. Swartley, Jr. Iron Age 96:1122 N 11 '15
- How time and money were saved by welding; oxy-acetylene process saved 13 days. II Foundry 43:235 Je '15
- Imperial oxy-acetylene equipment. II Foundry 43:168 Ap '15; Elec Ry J 45:517 Mr 13 '15; Ry Age (Mech ed) 89:197 Ap '15
- Largest oxy-acetylene cast iron welding job. II Iron Tr R 56:1186 Je 10 '15
- Metal added to a shaft. II Iron Age 96:623 S 16 '15
- Methods of jointing aluminum. II Mach 21:470-3 F '15
- New competitor of acetylene. J. F. Springer. Mach 21:303 J '15
- Oxy-acetylene process for boiler work; report of committee of Master boiler makers' association. Ry Age (Mech ed) 89:309-12 Je '15; Same cond. Ry Age 58:1165-6 Je 4 '15
- Oxy-acetylene process of welding. H. Cave. II diags Am Soc M E J 36:208-14 Je '14; Same cond. Eng M 47:750-2 Ag '14; Same cond. Eng & Contr 42:199-200 Ag 26 '14
- Oxy-acetylene welding. A. H. Waychoff. diags Sci Am S 79:132 F 27 '15
- Oxy-acetylene welding and cutting equipment. S. W. Miller. II diags Mach 22:85-99 O '15
- Oxyacetylene welding at Great Falls, Mont. diags Eng & Min J 99:534 Mr 20 '15
- Oxy-acetylene welding eliminates joints in gas mains; with cost figures. II Eng Rec 71:182 F 6 '15
- Oxyacetylene welding in mining. II diag Eng & Min J 99:393-7 F 27 '15
- Oxyacetylene welding in pipe work. W. L. Roueche. II Power 41:808-11 Je 15 '15
- Oxy-acetylene welding; International railway general foremen's association discussion. Ry Age (Mech ed) 89:425-6 Ag '15; Same cond. Ry Age 59:157 JI 23 '15
- Pipe welding at Panama Pacific exposition. II Metal Work 84:237-8 Ag 20 '15
- Portable welding outfit for metallurgical works. II Met & Chem Eng 13:194 Mr '15
- Possible substitute for acetylene in welding and cutting; by-product of natural-gas gasoline. J. F. Springer. Ry Age (Mech ed) 89:529-30 O '15
- Practice of the oxy-acetylene welding process. S. W. Miller. II Mach 22:106-17, 215-19 O-N '15
- Preparation of the work for oxy-acetylene welding. S. W. Miller. II Mach 22:101-5 O '15
- Present status of the art, with references to recent articles. Sibley J 29:197-8 Mr '15
- Recent developments in aluminum. E. V. Pannell. II Metal Ind n s 13:453-5 N '15
- Safety in oxy-acetylene welding. Eng M 49:596 JI '15
- Savings effected by using the Oxweld process in repair and reclamation work of varied character on ore vessels. Int Marine Eng 20:470 O '15
- Strength of welds made by the oxy-acetylene process; abstracts. A. Campion and W. C. Gray. Ind Eng 14:415-16 O '14; Am Soc M E J 37:855 Je '15
- Successful acetylene aluminum welding. Metal Work 84:173-4 Ag 6 '15
- Thermit welding. W. R. Hulbert. Am Gas Inst Pro 9:pt 2, 1182-4 '14
- Thermit welding of camshafts. A. H. Jones. Met & Chem Eng 13:929 D 1 '15
- Unusual oxy-acetylene weld. II Elec Ry J 45:898 My 8 '15
- Welding broken machine parts. II Power 42:687-8 N 16 '15
- Welding copper and copper alloys by acetylene methods. J. F. Springer. Ry Age (Mech ed) 89:367-9 JI '15
- Welding defective cores in paper mill by the Prest-O-Lite process. II Met & Chem Eng 13:770 O 15 '15
- Welding of high pressure mains. J. D. Shattuck. II diags Am Gas Inst Pro 9:pt 2, 945-1011 '14; Same abr. Am Gas Light J 102:54-5, 58-60, 66-9 Ja 25-F 1 '15; Discussion. Am Gas Inst Pro 9:pt 2, 1011-52 '14
- Welding the joints of steel gas mains. II Eng N 73:233-4 F 4 '15
- Welding up scrap nickel anodes. II Elec R & W Elec'n 66:1210-11 Je 26 '15; Same. Eng & Min J 100:19 JI 3 '15; Same. Foundry 43:283-4 JI '15; Same. Met & Chem Eng 13:453-4 JI '15; Same cond. Iron Age 95:1392 Je 24 '15; Same abr. Metal Ind n s 13:297 JI '15
- Welding water and gas mains. II Sci Am 112:272-+ Mr 20 '15
- Why acetylene is the combustible gas used for autogenous welding. M. K. Dunham. Mach 21:1017-18 Ag '15
- See also Electric welding; Solder and soldering

**Cost**

- Cost of oxy-acetylene welding. II Engineer 120:388 O 22 '15

**Welding, Electric. See Electric welding****Welfare work in industry**

- Better living conditions for coke workers; improved relations between the H. C. Frick coke company and its employees. II Iron Age 95:48-9 Ja 7 '15
- Eliminating the dinner bucket. E. W. Pargny. II Iron Tr R 55:1089-91 D 10 '14
- Humanitarian millwork in Greensboro, N. C. G. Dawe. II Am Ind 15:16-17 My '15
- Industrial betterment. F. E. Cardullo. II Mach 22:171-201 N '15
- Relief, compensation and pension system for Westinghouse employees. Elec R & W Elec'n 65:1225 D 26 '14; Same. Elec W 64:1233-4 D 26 '14; Same. Iron Age 94:1497 D 31 '14; Same. Ry R 55:783 D 26 '14; Same. Iron Tr R 56:53 Ja 7 '15
- Safety and welfare work in an electrical plant. C. L. Lucas. II Mach 22:210-14 N '15
- Safety-first, first-aid and welfare work of the Colorado fuel and iron company. II Met & Chem Eng 13:234-8 Ap '15
- Social service as a factor in good management. L. H. Burnett. Ind Eng 14:391-2 O '14
- Teaching English to foreigners in industry. P. Roberts. Am Ind 16:24-6 O '15
- Welfare and training of employees. O. L. Palmer. Am Gas Light J 103:332-3 N 22 '15
- Welfare measures for employees. M. A. Welsh. Elec Ry J 45:841 My 1 '15
- Welfare of workmen in European enterprises. C. Van Langendonck. II Sci Am S 78:360-1 D 5 '14
- Welfare plans of Westinghouse company. Elec W 64:1233-4 D 26 '14
- Welfare work at Glen White. G. D. Evans. II Colliery 35:473-5 Ap '15
- Welfare work at Pitscain, Pa., freight transfer. Ry Age 59:609-10 O 1 '15
- Welfare work in a steel foundry; the Reading steel casting company. II Iron Age 96:520-1 S 2 '15
- Welfare work in New Mexico. R. McCune. Colliery 35:387 F '15

**Welfare work in industry—Continued**

Welfare work of Tennessee company. L. Noland. Iron Tr R 56:1124; 57:356-8 Je 3, Ag 19 '15

Welfare work of the Frick coke co. II plan Colliery 36:117-24 O '15

See also Factory restaurants; Hospitals, Factory; Industrial betterment; Profit sharing; Safety devices and measures

**Well cars**

Well car of 200,000 lb. capacity. II diags Ry Age (Mech ed) 89:397-8 Ag '15

Well water. See Wells

**Welland ship canal**

Circumventing Niagara falls. B. Farrows. II map Sci Am S 78:387-8 D 19 '14

Construction of the Welland ship canal. W. A. Craick. II plan Int Marine Eng 20:154-6 Ap '15

Large reinforced-concrete cribs used for Welland ship canal entrance. R. P. Johnson. II diags Eng Rec 71:458-60 Ap 10 '15

Reinforced-concrete floating caissons for the Welland ship canal. II diags Eng N 73:1122-4 Je 10 '15

**Wells**

Comparison of the water of Sulphur Springs with deep well and mine waters. C. E. Siebenthal. Econ Geol 9:762-3 D '14

Data on cost, depth and strata penetrated for water supply wells in Iowa. Eng & Contr 43:76 Ja 27 '15

Difficulties overcome in sinking a deep well. P. E. Green. diag Eng N 74:450-2 S 2 '15

Drilling 30-in. wells for irrigation. II Eng N 73:924-5 My 13 '15

Effective water works publicity measure at Terre Haute. Eng & Contr 44:161-2 S 1 '15

Electric well-sounding instrument. L. W. Stocker. diags Eng N 73:444-6 Mr 4 '15

Engineering features of the Panama-Pacific international exposition. G. L. Bayley. II Am Soc M E J 37:585-91 O '15; Abstract. Eng N 74:845-6 O 28 '15

Experiences at Delaware, Ohio, in deriving water supply from wells in gravel. C. W. Wiles. Eng & Contr 43:449-50 My 19 '15; Discussion. 43:523 Je 9 '15

Ground water supplies. W. S. Johnson. II diags Boston Soc C E J 2:169-89 My '15; Same cond. Eng & Contr 44:29-31 Jl 14 '15; Discussion. Boston Soc C E J 2:283-90 S '15

Improved water from deep wells in northern Illinois. C. B. Williams. Am Water Works Assn J 2:410-15 Je '15; Same. Munic Eng 48:306-7 My '15

Measuring well-water levels under difficulties. H. W. Keith. diag Eng N 74:1037 N 25 '15

New well water supply of Galveston, Texas. H. G. Wheaton. II Eng & Contr 44:385-6 N 17 '15

Putting down into quicksand a dug well 10 ft. in diameter and 30 ft. deep. J. W. Ledoux. Eng & Contr 42:290 S 23 '14

Putting down large dug well in water bearing sand at Atlantic City. N. J. K. Allen. II Eng & Contr 42:355-6 O 14 '14

Recedence and pressure readings from submerged pumps. G. B. Covington. diag Power 41:473 Ap 6 '15

Selection of deep well pumping machinery. D. A. Graham. Eng & Contr 43:104-6 F 3 '15; Same. Engineer 120:164-6 Ag 13 '15; Abstract. Eng N 73:184 Ja 28 '15; Abstract. Eng Rec 71:204-5 F 13 '15

Success or failure of wells. R. E. Horton. Eng & Contr 44:138-9 Ag 25 '15

Surface pollution of a deep well water. J. W. Hill. Eng & Contr 44:386 N 17 '15

Syphoning water from series of drilled wells to a common pump well at Kokomo, Ind. O. O. Jones. plan Eng & Contr 43:191 Mr 3 '15

Types and properties of deep well pumps. G. W. Bissell. Eng & Contr 44:33-4 Jl 14 '15

Water supply, plumbing and sewage disposal for country homes. R. W. Trullinger. diags Dom Eng 72:194-7, 224-6 Ag 14-21 '15

See also Artesian wells; Drilling and boring (earth and rocks); Petroleum

**Cleaning**

Using 'compressed' air to clean sand out of driven wells at Detroit. II Eng & Contr 44:386 N 17 '15

Wells, Artesian. See Artesian wells

Welsbach mantles. See Gas mantles

Wenatchee, Washington

**Streets**

Wood block pavement in the City of Wenatchee, Wash. F. J. Sharkey. II Eng & Contr 44:300-2 O 20 '15

West, Thomas Dyson, 1851-1915

Foundry industry loses leader in accident. por Foundry 43:287-8 Jl '15

Sketch. por Iron Age 95:1426 Je 24 '15; Iron Tr R 56:1336-6 Je 24 '15; Met & Chem Eng 12:482 Jl '15

Tribute to memory of Thomas D. West. P. L. Simpson. Foundry 43:325-4 Ag '15

**West**

Engineering works of the West. II Eng Rec 72:261-4 Ag 23 '15

Features of engineering in the West. H. F. Stratton. II maps Sibley J 29:139-49, 184-90, 223-7 F-Ap '15

See also Pacific coast

**Description and travel**

Eothen! C. H. Whitaker. II Am Inst Arch J 3:459-67 N '15

West Jersey and seashore railroad

Third rail and trolley system. J. V. B. Duer. II diags Am Inst E E Pro 34:1237-53 Je '15; Abstract. Elec Ry J 46:58-9 Jl 10 '15

West Virginia mining institute

Annual meeting, Huntington, Dec. 10 and 11, 1914. Colliery 35:387-8 F '15

West Virginia state association of master plumbers

14th annual convention, Charleston, March 16-17. Dom Eng 70:414-15 Mr 27 '15

Western association of electrical inspectors

10th annual meeting, Minneapolis, Minn., Jan. 26. Elec R & W Elec'n 66:267-61 F 6 '15

Western association of short line railroads

Bad features of the present laws regulating mail carriage: letter to congressmen. Ry Age 58:58 Ja 8 '15

Western electric company

Western electric developments in 1914. Elec R & W Elec'n 66:45-7 Ja 2 '15

Western newspaper union

Western newspaper union plant in Chicago. T. Wilson. II plan Power 41:2-5 Ja 5 '15

Western newspaper union solves problem of moving its large plant without interrupting business. J. T. Elliott. II Inland Ptr 54:406-8 D '14

Western red cedar association

9th annual meeting. Elec R & W Elec'n 66:164 Ja 23 '15

Western society of engineers

Annual dinner speeches. W Soc E J 20:56-95 Ja '15

45th annual meeting, Chicago, Jan. 13. Elec R & W Elec'n 66:165 Ja 23 '15

Founding of the Western society of engineers. W. Katte. W Soc E J 20:339-40 Ap '15

Western states water power conference

Ferris bill at water power conference assailed. Eng Rec 72:429-4 O 2 '15

State control of water-power. Elec W 66:682, 734-6 S 25-O 2 '15

Westinghouse electric & manufacturing co.

Annual report for the fiscal year ended March 31, 1915. Elec W 65:1286-7 My 22 '15

Relief, compensation and pension system for Westinghouse employees. Elec R & W Elec'n 65:1225 D 26 '14; Same. Elec W 64:1233-4 D 26 '14; Same. Iron Age 94:1497 D 31 '14; Same. Ry R 55:783 D 26 '14; Same. Iron Tr R 56:53 Ja 7 '15

Westinghouse electric developments in the year 1914. Elec R & W Elec'n 66:43-5 Ja 2 '15

Westminster hall, London

Reinforcement for the roof timbers of Westminster hall, England. F. Baines. Eng & Contr 42:172-5 Ag 19 '14

- Weston, Edward, 1850-**  
Inventions. L. H. Baekeland. por Sci Am S 79:108-9 F 13 '15  
Ninth Perkin medal, presentation. Eng & Min J 99:234-5 Ja 30 '15  
Perkin medal award. por J Ind & Eng Chem 7:243-54 Mr '15  
Presentation of the Perkin medal to Edward Weston. por Met & Chem Eng 13:111-16 F '15
- Wharves**  
Corrosion of steel wharves at Kowloon: abstract. S. H. Ellis. diags Am Soc M E J 37: 123-4 F '15  
Experiences with concrete in the republic of Panama. A. P. Crary. 11 diags Eng N 73:214-16 F 4 '15  
Municipal steamboat landing at Peoria, Ill. diags plan Eng N 73:15 Ja 7 '15  
Municipal wharves and sheds at Los Angeles. 11 diags Eng N 73:324-5 Ap 29 '15  
Novel bulkheads for wharves at Jacksonville. H. D. Mendenhall. diags map Eng N 74: 772-4 O 21 '15  
*See also* Docks; Piles and pile driving; also names of cities, subhead Wharves
- Wheat**  
Effect of certain organic compounds on wheat plants in the soil. F. W. Upson and A. R. Powell. 11 J Ind & Eng Chem 7:420-2 My '15  
*See also* Flour
- Wheatstone bridge**  
Equivalence of Wheatstone bridge to three parallel circuits. A. H. Adams. Elec W 66: 406 Ag 21 '15  
Wheatstone bridge for resistance thermometry. C. W. Waldner and others. 11 diags U S Bur Stand Bul 11:571-90 My 27 '15; Summary. J Fr Inst 178:777 D '14
- Wheel chairs, Electric**  
Electric rolling chairs. 11 Eng N 73:1094 Je 3 '15  
Evolution of the wheel-chair. 11 Sci Am 112: 497-4 My 29 '15
- Wheelbarrows**  
Moving brick by wheelbarrow. W. B. Conant. 11 Eng N 74:701 O 7 '15  
Safe wheelbarrows and trucks. diag Ind Eng 15:43-4 F '15; Same. Foundry 43:265-6 Jl '15; Same. Iron Tr R 57:396-4 Ag 26 '15; Same cond. 11 Am Ind 15:supl-4 Jl '15
- Wheels**  
Pressed steel wheel for factory trucks. 11 Iron Age 96:1183 N 18 '15  
Standardization of chilled iron crane wheels; abstracts. F. K. Vial. diags Am Soc M E J 37:147-51 Mr '15; Iron Tr R 55:1083-7+ D 10 '14  
*See also* Automobiles—Wheels; Axles; Car wheels; Grinding wheels; Machinery; Motor trucks—Wheels; Motor vehicles—Wheels; Tires (automobile); Turbines; Water wheels
- Whetstones**  
Whetstones in the United States national museum. Sci Am S 79:276 My 1 '15  
White cedar association, Northern. *See* Northern white cedar association
- White mountains**  
Improving White mountain forests. W: L. Hall. 11 Am For 21:117-26 F '15
- White pine.** *See* Pine
- White Plains, New York**  
*Architecture*  
Winifred Masterson Burke relief foundation; views and plans. Brickb 24:pl 91-6 Jl '15  
*Hotels*  
Gedney Farms. Arch Rec 38:696 D '15  
Whitney, Willis Rodney, 1868-  
Sketch. por Eng M 50:202-3 N '15  
**Whole wheat flour.** *See* Flour  
Wilksburg, Pennsylvania  
*Railroads*  
Pennsylvania track elevation through Wilksburg. 11 plans Ry Age 59:654-8 O 8 '15  
Williams, Richard Richardson, 1843-1915  
Sketch. por Iron Age 96:801 O 7 '15
- Willow.** *See* Osiers
- Wilmington, Delaware**  
*Water supply*  
Water supply at Wilmington, Delaware. H. M. Hoopes, jr. and J. M. Caird. 11 Am Water Works Assn J 1:111-34 Mr '14; Same cond. Eng & Contr 42:210-12 Ag 26 '14
- Winchester, England**  
Winchester in war-time. H: Winslow. 11 Am Inst Arch J 2:561-4 D '14
- Wind bracing.** *See* Wind pressure
- Wind motors**  
Wind motors; abstract. M. Drzewiecki. Am Soc M E J 37:403 Jl '15
- Wind power.** *See* Windmills
- Wind pressure**  
Notes on wind pressure. R. G. Keeyill. Engineer 119:393 Ap 16 '15  
Structural damage slight in New Orleans storm. J. F. Coleman and W. H. P. Creighton. Eng N 74:765-6 O 14 '15  
Waste of metal in mill-building columns. C. L. Christensen. Eng N 73:590-1 Mr 25 '15  
Why suction should be considered in designing for wind stresses. A. Smith. Eng N 73: 549 Mr 18 '15  
Wind-bracing requirements in municipal building codes. R. Fleming. Eng N 73:485-7 Mr 11 '15  
Wind pressure formulas and their experimental basis. R. Fleming. Eng N 73:160-3 Ja 28 '15  
Wind pulls rivets in stack brace. 11 Power 42:426 S 21 '15  
Wind stresses and factors of safety. R. D. Coombs. Eng N 73:359 F 18 '15  
Wind stresses in highway bridges. R. Fleming. Eng N 73:372-5 F 25 '15  
Wind stresses in railroad bridges. R. Fleming. Eng N 73:252-6 F 11 '15  
Wind stresses in skew bridges. J. P. J. Williams. Eng N 73:622-6 Ap 1 '15  
Wind stresses in steel mill-buildings. R. Fleming. diags Eng N 73:210-14 F 4 '15  
Wind stresses in the steel frames of office buildings. A. Smith. tables pls W Soc E J 20: 341-64 Ap '15  
Wind stresses in the steel frames of office buildings. W. M. Wilson and G. A. Maney. tables 11l U Eng Exp Sta Bul 80:1-38 '15; Abstract. Eng Rec 72:281-2 Ag 21 '15  
Wind stresses in the steel frames of office buildings; with discussion. W. M. Wilson. tables pls W Soc E J 20:368-90 Ap '15
- Wind resistance.** *See* Air resistance
- Wind shields**  
Wind-shield cleaner invented by Prince Henry. 11 Sci Am 113:84 Jl 24 '15
- Wind wheels.** *See* Windmills
- Windmills**  
Small aero-electric plant. H. H. Williamson, jr. 11 Sci Am 113:200-1 S 4 '15
- Window dressing.** *See* Show windows
- Window frames**  
Details of pocket window frame. W. S. Wilkin. diags Bldg Age 37:56-7 Ag '15  
Window frame with glass louvers. diags Bldg Age 37:73-4 Ja '15
- Window seats**  
Details of seat for a bay window. J: Wavlek, jr. diags Bldg Age 37:33-4 Ag '15
- Windows**  
Casement windows: a comparison with double hung windows. Bldg Age 37:66 Ja '15  
Planning for daylight and sunlight in buildings; with discussion. L. B. Marks and J. H. Woodwell. biblog 11 diags Illum Eng Soc 9: 643-86. no 7 '14  
Short method for calculating glass surface. E. M. Shealy. Dom Eng 72:286 S 4 '15  
Wind leakage. F. K. Davis. Heat & Ven 12:43-9 Ap '15  
Window over entrance, custom house, Salem, Mass.; measured drawing. G. Robb. Brickb 24:pl 9 S '15  
*See also* Bay windows; Glass; Show windows
- Windows, Cloth.** *See* Cloth windows

**Wine**

Contributions of the chemist to the wine industry. C. S. Ash. *J Ind & Eng Chem* 7:273-4 Ap '15

**Winnipeg, Manitoba****Water supply**

Construction features of the Greater Winnipeg water works. J. H. Puertes. *diags Eng & Contr* 44:377-80 N 10 '15

Curves on Winnipeg aqueduct built with straight sections of forms. *diags Eng Rec* 72:657-8 N 27 '15

Direct control over construction materials is feature of 100-mile Winnipeg aqueduct. *Il Eng Rec* 71:594-6 My 8 '15

Progress on the greater Winnipeg aqueduct. *Il Eng N* 73:230-1 F 4 '15

**Winter construction**

Erecting a building under a tent in winter. *Il Eng N* 73:394 F 25 '15

See also Concrete construction in winter

**Wire**

Copper wire tables. U S Bur Stand Circ 31: 1-76 '14

Effective resistance and inductance of iron and bimetallic wires. J. M. Miller. *diags U S Bur Stand Bul* 12:207-67 N 8 '15

Forming a wire in the automatic screw machine. E. Whitney. *diags Mach* 21:294-5 D '14

Handy wire straightener. *diag Eng & Min J* 100:584 N 27 '15

Preventing kinking in handling wire from coils. J. G. Koppel. *Il Elec Ry J* 46:66 JI 10 '15

Tests of splices in galvanized iron wire. T. Croft. *Il Elec R & W Elec'n* 67:716-17 O 16 '15

Wire products and wire-working machines. E. R. Miner. *Il Mach* 21:389-92 Ja '15

See also Barbed wire entanglements; Cables; Electric wire and wiring

**Wire, Trolley. See Trolley wire****Wire rope**

Armored wire rope. *Eng & Min J* 100:191 JI 31 '15

Design and construction of aerial ropeways. *diags Engineer* 120:79-81 JI 23 '15; *Excerpt* (Traction rope). *Eng & Min J* 100:475 S 18 '15; *Excerpt* (Track ropes). *Eng & Min J* 100:618 S 25 '15

Large-sized drums and sheaves give wire rope economy. *diag Eng Rec* 72:582 N 6 '15

Oil drillers develop good wire rope practice—do not jerk loads. *Il Eng Rec* 72:673 N 27 '15

Steel-wire hoisting ropes; rule for finding the load stress and the required diameter. F. W. Sperr. *Colliery* 36:606-7 Je '15

Wire cables of various types and materials tested by U. S. Bureau of standards. *Il diag Eng Rec* 72:567-8 N 6 '15

Wire rope. *Sci Am* 112:639 Je 26 '15

Wire rope clips should be put on with saddle next main part. *Eng Rec* 72:269 Ag 28 '15

See also Cables

**Wire-working machinery**

New heavy wire drawing machine. *Il Iron Tr R* 57:404 Ag 26 '15

Wire bending fixture. G. P. Breitschmid. *diag Mach* 21:408 Ja '15

Wire products and wire-working machines. E. R. Miner. *Il Mach* 21:389-92 Ja '15

**Wireless telegraph**

Auxiliary radio equipment on steamer Howard tested. *Elec R & W Elec'n* 67:979 N 27 '15

Baltimore municipal White truck has wireless equipment. *Il Automobile* 31:1023 D 3 '14

Commercial wireless apparatus. *Il diag Elec W* 66:882-3 O 16 '15

Communicating over great distances; the invention of the telegraph, telephone and wireless telegraphy. *Il Sci Am* 112:573-4 Je 5 '15

Conditions affecting the variations in strength of wireless signals. E. W. Marchant. *diags Inst E I J* 53:329-40 Mr 1 '15; *Abstract. Eng M* 49:266-7 My '15; *Summary. Elec R & W Elec'n* 66:446 Mr 6 '15; *Discussion. Inst E I J* 53:340-8 Mr 1 '15

Considerations on the sensitiveness of the heterodyne receiver in wireless telegraphy. M. Latour. *Elec W* 65:1039 Ap 24 '15

Construction of a multiple tuner; complete working drawings and specifications for the amateur. C. L. Sears. *diags Sci Am S* 80:68-70 JI 31 '15

Continuous waves in long distance radio telegraphy. L. F. Fuller. *bibliog Il Am Inst E I Pro* 34:567-85 Ap '15; *Abstract. with discussion. Elec R & W Elec'n* 66:736-7 Ap 17 '15; *Abstract. with discussion. Elec W* 65:983-4 Ap 17 '15; *Discussion. Am Inst E I Pro* 34: 2927-40 D '15

Device for receiving wireless time signals. *Il diag Elec W* 65:818-19 Mr 27 '15

Directing electromagnetic waves. A. Artom. *Elec W* 66:351-2 Ag 14 '15

Discussion of the proposed work to be undertaken by the international commission on wireless telegraphy. W. Duddell. *Elec W* 65: 347-8 F 6 '15

Do the waves of wireless telegraphy affect organic life? C. Abel-Musgrave. *Elec W* 66: 710 S 25 '15

Double-audion type of receiver; description of the equipment used for the reception of continuous radiotelegraphic waves at station in North Dakota. A. H. Taylor. *Elec W* 65:652-5 Mr 13 '15

Electrical constants of antennas. L. Cohen. *diag Elec W* 65:286-3 Ja 30 '15

Function of the earth in radio-telegraphy. J. A. Fleming. *Sci Am S* 79:29 Ja 9 '15

Home-made wireless photo-recording set. *diags Sci Am S* 80:92-3 Ag 7 '15

Longitudes by wireless telegraphy. F. B. Littell. *Sci Am* 112:382-3 Ap 24 '15

Photo-electricity; the intimate relations of light and electricity. J. A. Fleming. *Sci Am S* 80:18-19 JI 10 '15

Pure electron discharge and its applications in radio telegraphy and telephony. I. Langmuir. *diags Gen Elec R* 18:327-39 My '15; *Abstract. Elec W* 65:1247 My 15 '15

Quantitative experiments in radiotelegraphic transmission. L. W. Austin. U S Bur Stand Bul 11:69-86 N 15 '14

Radio generator for amateurs. F. E. Ward. *Il Sci Am S* 80:86 JI 17 '15

Radio-telegraphic investigations; committee report of section A of the British association; abstracts. *Engineer* 120:279 S 17 '15; *Elec R & W Elec'n* 67:676-6 O 9 '15

Radiotelegraphy and radiotelephony. J. L. Hogan, jr. *Elec W* 65:27-8 Ja 2 '15

Radiotelegraphy without elevated antennas. C. A. Culver and J. A. Riner. *Elec W* 65: 723-6 Mr 20 '15; *Abstract. Eng M* 49:263-9 My '15

Recent advances in wireless measuring instruments. H. T. Wade. *Il diags Sci Am* 113: 356 O 23 '15

Recent electrical progress. *Engineer* 119:34 Ja 8 '15

Records of radio time signals made with a physiological recorder. C. W. Waggoner. *Il Sci Am S* 79:152 Mr 6 '15

Resistance of radiotelegraphic antennas. *Elec R & W Elec'n* 67:427, 905 S 4, N 13 '15

Review of some notable developments of the past year. *Sci Am S* 79:99 F 13 '15

Sound wheel, a novel wireless detector. *Il Sci Am* 112:384 Ap 24 '15

Storage batteries for radio service. *Elec R & W Elec'n* 66:353 F 20 '15

Strength of radio signals. *Elec R & W Elec'n* 67:335 Ag 21 '15

Ultraudion detector for undamped waves. L. de Forest. *Il Elec R & W Elec'n* 66:357-8 F 20 '15; *Same. Elec W* 65:465-6 F 20 '15

Washington-Paris longitude by radio signals; a valuable application of wireless communication. F. B. Littell and G. A. Hill. *Sci Am S* 79:266-7 Ap 24 '15

Wireless inventions and the press; portable apparatus. *Sci Am* 113:462 N 27 '15

Wireless-telegraphy antenna for long waves. *diags Elec W* 66:412 Ag 21 '15

Wireless transmission. Sibley J 29:109 Ja '15; *Same. Sci Am S* 79:33 F 6 '15

Wireless transmission of energy. E. Thomson. *diags Sci Am S* 79:252-3, 270-1 Ap 17-24 '15; *Same. Gen Elec R* 18:316-27 My '15

Year in the electrical industry. *Elec R & W Elec'n* 66:3 Ja 2 '15

See also Electric waves

**Wireless telegraph for railroads**

Radio telegraphy and telephony for railroads. J. L. Hogan, jr. *Il diag* Elec W 66:570-2 S 11 '15

Wireless telegraph and telephone on the D. L. & W. R. R.; abstracts. L. B. Foley. *Il Ry R* 56:491-3 Ap 10 '15; *Ry Age* 53:378 F 26 '15; *Eng M* 48:253-6 My '15

Wireless telegraph and wireless telephone on the Union Pacific R. R. *Il Ry R* 55:587-91 N 14 '14; *Abstract Eng M* 48:585-8 Ja '15

Wireless telegraphy and railroading. H. D. Schedler. *Il Sci Am* 112:338-4 Ap 10 '15

**Wireless telegraph in war**

Our army wireless automobiles. C. H. Claudy. *Il Sci Am* 112:478 My 23 '15

Portable radio equipment of the United States army. *Il Elec W* 66:184 JI 24 '15

Radio telephone and telegraph equipment on a motorcycle. *Il Sci Am* 112:293 Mr 27 '15

Science in the war and after the war. J. A. Fleming. *Sci Am S* 80:339 N 27 '15

**Wireless telegraph stations**

Clean-up work after erecting three 600-ft. radio towers. *Eng N* 74:28 JI 1 '15

Factors determining the efficiency of radio stations. R. Pfund. *Eng M* 49:257-8 My '15

Foundations for high towers at Darien, C. Z. I. W. Dye. *Il diag Eng N* 73:1178-9 Je 17 '15

Method of erecting Marconi masts. L. H. Peebles. *Il diag Eng N* 73:1182-4 Je 10 '15

Radio station for Society Islands near completion. Elec R & W Elec'n 67:986 N 27 '15

600-ft. self-supported radio towers at Darien, C. Z. I. W. Dye. *Il diag Eng N* 73:1228-31 Je 24 '15

Towers for radio-telegraph stations. *Il diag Engineer* 119:427-8 Ap 30 '15

Trouble near wireless stations. Elec R & W Elec'n 67:900 N 13 '15

**Wireless telephone**

Colin-Jeanne wireless telephone apparatus. *Il Elec R & W Elec'n* 66:1168 Je 19 '15

Device for wireless telephony. Iron Age 96:237 JI 29 '15

First public use of the de Forest lamp as an oscillating audion. L. de Forest. *Il Elec R & W Elec'n* 67:908 N 13 '15

Future of radio telephony. E. H. Colpitts. *Il Sci Am* 113:485-4 D 4 '15

Latest steps in radio telephony. H. Pender. *Il map Eng M* 50:373-81 D '15

Long distance wireless telephony; distances achieved in recent tests. *map Sci Am* 113: 219 O 9 '15

Marconi's wireless telephone. J. A. White. *Il Sci Am* 112:450 My 15 '15

New promise for wireless telephony; invention of Professor Pupin. *Eng M* 50:444 D '15

Principles of radio-telephony. J. L. Hogan, jr. *Il Sci Am* 112:386-4 Mr 27 '15

Pure electron discharge and its applications in radio telegraphy and telephony. I. Langmuir. *diag Gen Elec R* 18:327-39 My '15; *Abstract Elec W* 65:1247 My 15 '15

Radio telegraphy and telephony for railroads. J. L. Hogan, jr. *Il diag Elec W* 66:570-2 S 11 '15

Radiotelegraphy and radiotelephony. J. L. Hogan, jr. *Elec W* 65:27-8 Ja 2 '15

Radiotelephony. W. C. White. *Gen Elec R* 18: 38-41 Ja '15; *Same Sci Am S* 80:146-7 S 4 '15

Voice carried 4900 miles by radio. *Il map Elec W* 66:783-91 O 9 '15

Wireless auxiliary to telephone system. *Il Elec R & W Elec'n* 66:1169 Je 19 '15

Wireless telegraph and telephone on the D. L. & W. R. R. L. B. Foley. *Il Ry R* 56:491-3 Ap 10 '15

Wireless telegraph and wireless telephone on the Union Pacific R. R. *Il Ry R* 55:587-91 N 14 '14; *Abstract Eng M* 48:585-8 Ja '15

Wireless telephony. *Sci Am S* 79:121 F 20 '15

**Wireless waves**

Starting an automobile by wireless waves. *Sci Am* 113:323 O 9 '15

**Wisconsin**

Increased taxation in Wisconsin and its effect upon public service companies. E. Gruhl. *Elec W* 65:259 Ja 23 '15; *Same Elec Ry J* 45:234 Ja 30 '15

**Highway commission**

Organization and standards of the Wisconsin highway commission. *Il diag Eng & Contr* 42:398-403 O 28 '14

**Industries and resources**

Mining and milling of lead and zinc ores in the Wisconsin district, Wisconsin. C. A. Wright. *Il plan U S Bur Mines Tech Pa* 95: 1-38 '15

**Wisconsin electrical association**

7th annual convention, Milwaukee, Jan. 20-22. *Elec Ry J* 45:232-5 Ja 30 '15

7th annual convention, Milwaukee, Jan. 21 and 22. *Elec R & W Elec'n* 66:206-9 Ja 30 '15

**Wisconsin master plumbers association**

Annual convention, Milwaukee, Wis., January 19-20, 1915. *Metal Work* 83:189-91 Ja 28 '15

21st annual convention in Milwaukee. *Dom Eng* 70:148-50 Ja 30 '15

**Wisconsin University**

University promotes engineering work without displacing consulting engineer. G. R. Bascom. *Eng Rec* 72:47-8 JI 10 '15

Witwatersrand. See Gold mines and mining—Transvaal

**Wolframite**

Wolframite in lower Burma. E. M. Lefroy. *Eng & Min J* 99:684 Ap 17 '15

**Woman****Employment**

British and French women make shells; photographs. *Iron Tr R* 57:686-7 O 7 '15

Efficiency of French women as railway workers. W. S. Hatt. *Il Ry Age* 59:942-5 N 19 '15

Employment of women as machinists. *Il Engineer* 120:218 S 3 '15; *Excerpt Eng M* 50: 451 D '15

Employment of women in engineering workshops. *Engineer* 120:181-2 Ag 20 '15

Labour after the war—employment of women; abstract of report to the British association. *Engineer* 120:292-3 S 24 '15

Tramways during war times. J. Dalrymple. *Elec Ry J* 46:880 O 23 '15

Women as successful master plumbers. B. H. Albee. *Il Dom Eng* 73:71-2 O 16 '15

Women conductors for London. *Elec Ry J* 46: 962 N 6 '15

Women conductors in Berlin. *Il Elec Ry J* 46: 675 O 2 '15

Women fast taking the places in tramway service of men needed at the front. *Elec Ry J* 46:33 JI 8 '15

Women railway employees in England. *Il Ry Age* 58:1120 My 28 '15

Wood, Henry A. Wise, 1865-

Sketch. *por Eng M* 50:213 N '15

**Wood**

Lightest known wood. *Sci Am S* 79:96 F 6 '15

Modern uses of wood. H. von Schrenk. *Il diag W Soc E J* 20:27-44; *Discussion*. 20: 44-51 Ja '15

Musical woods. *Sci Am S* 78:355 D 5 '14

Tulip or yellow poplar tree. *Il Am For* 21: 833-40 Ag '15

Use of native woods for interior finish. C. M. Price. *Il Brickb* 24:217-22, 239-42, 285-9 S-N '15

See also Forests and forestry; Lumber; Poles; Timber; Trees; also names of trees, e. g. Cedar, Chestnut, Cypress, Douglas fir, Hemlock, Maple, Pine, Redwood

**Testing**

Mechanical properties of teak wood; abstract. A. Weiskopf. *Am Soc M E J* 87:289-90 My '15

Rocky mountain mine timbers. N. de W. Betts. *diag U S Agric Bul* 77:1-34 '14

Strength tests of structural timbers treated by commercial wood-preserving processes. H. S. Betts and J. A. Newlin. *U S Agric Bul* 286:1-14 '15

Test of long-submerged hemlock timber. T. R. Lawson. *Il Eng N* 73:159 Ja 23 '15

**Wood as food**

Edible wood. *Sci Am* 113:171 Ag 21 '15

Edible wood. *Sci Am S* 80:144 Ag 28 '15

**Wood as fuel**

Wood and coal as fuel for steam boilers. H. B. Reynolds. *tables Sibley J* 30:14-20 O '15

**Wood as fuel—Continued**

Wood as a fuel for mine power plants. E. A. Holbrook. *diags Eng & Min J* 99:845-7 Ap 10 '15

**Wood ashes**

Potash from wood and plant ashes. H. Bradley. *diag Met & Chem Eng* 13:841-6 N 15 '15

**Wood borers. See Borers (animals)****Wood distillation**

Chemical engineering of the hardwood distillation industry. J. R. Withrow. *J Ind & Eng Chem* 7:912-13 N '15; Same. *Met & Chem Eng* 13:797-9 N 1 '15

Composition of wood turpentine. M. Adams. *J Ind & Eng Chem* 7:957-60 N '15

Contributions of the chemist to the hardwood distillation industry. S. W. Katzenstein. *J Ind & Eng Chem* 7:940-2 N '15

Distillation of Douglas fir at high temperatures. B. Tremper. *J Ind & Eng Chem* 7:926-7 N '15

Hardwood distillation industry in America. E. H. French and J. R. Withrow. *II Met & Chem Eng* 13:80-9 Ja '15; Same. *J Ind & Eng Chem* 7:47-55 Ja '15; Discussion. 7:55-6, 899-900 Ja, O '15

Oils of the coniferae. A. W. Schorger. *II J Ind & Eng Chem* 6:723-7, 809-10, 893-5; 7:24-6 S-N '14, Ja '15

Preliminary experiments on the effect of temperature control on the yield of products in the destructive distillation of hardwood. R. C. Palmer. *diags J Ind & Eng Chem* 7: 663-9 Ag '15

Steam generation in a wood-distilling plant. L. Eddy. *diag Power* 41:846-Je 22 '15

Waste pine wood utilization. J. E. Teeple. *J Ind & Eng Chem* 7:929-30 N '15

What chemistry has done to aid the utilization of wood. S. F. Acres. *J Ind & Eng Chem* 7:913-15 N '15

Yield of by-products from destructive distillation of some western conifers. H. K. Benson and M. Darrin. *J Ind & Eng Chem* 7:916-18 N '15

**Wood finishing**

Care and use of the cabinet scraper. C. A. King. *diags Bldg Age* 37:37-8 JI '15

Education in woodfinishing. W. F. Comstock. *II Arch & Bldg* 47:65-6 F '15

Electric equipment for painting without a brush. *II Elec W* 66:1050 N 6 '15

Electrically operated rubbing and polishing machine. *II Elec R & W Elec'n* 67:906 N 13 '15

Features of the home of redwood. J. H. Browne. *II Bldg Age* 37:38-9 Ag '15

Hints on painting exterior woodwork. *II Bldg Age* 37:65-6 JI '15

**Wood oil, Chinese. See Chinese wood oil****Wood pipes. See Pipes, Wood****Wood preservation**

Air seasoning of ties. A. H. Noyes. *Ry R* 56:111 Ja 23 '15

American railway engineering association committee report. *Ry R* 56:399-400 Mr 20 '15

American wood preservers' association: abstracts of papers presented at the 11th annual convention, Chicago, Jan. 19-21. *Eng Rec* 71: 105-8, 144-5 Ja 23-30 '15

American wood preservers' association 11th annual convention, Chicago, Jan. 19-21. *Elec Ry J* 45:181-2 Ja 23 '15

American wood preservers' convention at Chicago, Jan. 19-21, 1915. *Ry Age* 58:158-63 Ja 22 '15

American wood preservers' convention; modifications made in committees' recommendations. *Elec Ry J* 45:237 Ja 30 '15

Annual meeting of the American wood preservers' association. *Eng N* 73:182-3 Ja 28 '15

Behavior of treated ties in alkali soils. *Elec Ry J* 46:1002 N 13 '15

Carbolineum and creosote. H. H. Alcock. *Am Gas Light J* 103:58-9, 125 JI 26, Ag 23 '15

Carbolineum and creosote. S. R. Church. *Am Gas Light J* 103:103 Ag 18 '15

Creosoting of cross ties as practiced by American railroads. A. C. Steinmayer. *II Assn Eng Soc J* 54:110-20 Mr '15

Economical use of wood preservation of timber. E. W. Bright. *Elec Ry J* 44:1351-2 D 19 '14

Effect of steaming process of creosoting on strength of Oregon fir piling; abstracts. H. B. Macfarland. *Eng Rec* 70:487-8 O 31 '14; *Eng & Contr* 42:481-3 N 18 '14; Summary. *Eng N* 73:863 O 29 '14; *Ry Age* 57:1156 D 15 '14

Effect of the war on timber preservation. *Ry Age* 58:842-5 Ap 13 '15

Effect of zinc chloride on timber strength. *Elec Ry J* 46:78 JI 10 '15

Effectiveness of wood preservatives. *Ry R* 57: 79 JI 17 '15

Experiences in creosoted wood block paving. H. R. Dutton. *Good Roads n s* 10:266-7 N 6 '15

Mixing tar with creosote. P. C. Ralby. *Ry R* 56:242-7 F 20 '15

Modern application of wood preserving methods. H. A. Sterling. *Am For* 21:878-9, 937-8 Ag-S '15

More about wood preservatives. H. A. Sterling. *Ry Age* 57:1135-6 D 18 '14

Only creosote properly applied withstands teredo. *Eng Rec* 71:209-10 F 13 '15

Preservation of mine timber. H. A. Appel. *Colliery* 35:481-3 Ap '15

Preservative treatment of timber. H. F. Weiss and C. H. Teesdale. *Elec Ry J* 46:625-6 S 25 '15

Preservative treatment of timber. J. M. Goldman. *Colliery* 35:814-17 Ja '15

Results obtained from the preservative treatment of telephone poles. F. L. Rhodes and R. F. Hosford. *bibliog II Am Inst E E Pro* 34:2343-87 O '15; Abstracts. *Elec Ry J* 46: 879 O 23 '15; *Elec W* 66:1031 N 6 '15

Specification for a coal-tar creosote solution. H. Von Schrenk and A. L. Kammerer. *Eng Rec* 71:144 Ja 30 '15; Same. *Ry Age* 58:160-1 Ja 22 '15

Specification for a creosote-coal tar solution. *Eng Rec* 71:398 Mr 27 '15

Specification for zinc chloride treatment. W. F. Goitra. *Ry Age* 58:459 Mr 13 '15

Strength tests of structural timbers treated by commercial wood-preserving processes. H. S. Betts and J. A. Newlin. *U S Agric Bul* 286: 1-14 '15

Tests of wood preservatives. H. F. Weiss and C. H. Teesdale. *II U S Agric Bul* 145:1-20 '15

Tie preservation on the Baltimore & Ohio R. R.; abstracts. F. J. Angier. *Ry Age* 59: 537-8 S 17 '15; *Eng & Contr* 44:396-7 N 17 '15; *Ry R* 57:630-3 N 13 '15

Tie treating on the Boston & Worcester street railway. *II Elec Ry J* 45:678-9 Ap 3 '15

Tie treatment in British India. *II Ry R* 56: 248-9 F 20 '15

Toxicity of various wood preservatives. R. M. Fleming and C. J. Humphrey. *II J Ind & Eng Chem* 7:652-8 Ag '15

Treated timber for factory construction. *Eng N* 73:183-4 Ja 23 '15

Treated timber for factory construction. F. J. Hoxie. *Eng Rec* 71:107-8 Je 23 '15; Same. *Eng & Contr* 43:563-4 Je 23 '15; Same cond. *Eng M* 48:896-8 Mr '15

Wood preservation statistics. *Ry Age* 58:1447-8 Je 18 '15

Wood preservers' convention, Jan. 19-21, 1915. *Ry R* 56:115-17 Ja 23 '15

Wood preserving department. See monthly numbers of the American forestry

Work and some accomplishments of the forest products laboratory. Madison, Wis. H. F. Weiss. *W Soc E J* 19:946-51 D '14

See also Creosoting; Dry rot

Wood preservers' association. American. See American wood preservers' association

Wood pulp

Evolution of the pulp and paper industry. T: J. Keenan. *Sci Am S* 80:131 Ag 28 '15

Wood using industries

Annual consumption of wood. *Am For* 20:897 D '14

Wood waste

Manufacture of ethyl alcohol from wood waste; the hydrolysis of white spruce. F. W. Kressmann. *J Ind & Eng Chem* 7:920-2 N '15

Manufacture of ethyl alcohol from wood waste; western larch as a raw material. F. W. Kressmann. *J Ind & Eng Chem* 7:922-3 N '15

**Wood waste—Continued**

- Methods of disposing of refuse from wood-working plants. F. O. Alton. Elec R & W Elec'n 67:556-7 S 25 '15
- Tannin content of Pacific coast conifers. H. K. Benson and T. G. Thompson. J Ind & Eng Chem 7:916-16 N '15
- Use of ammonium hydroxide for the extraction of rosin from wood. H. K. Benson and H. N. Crites. J Ind & Eng Chem 7:918-20 N '15
- Waste pine wood utilization. J. E. Teeple. J Ind & Eng Chem 7:929-30 N '15
- What chemistry has done to aid the utilization of wood. S. F. Acree. J Ind & Eng Chem 7:918-15 N '15
- Yield of by-products for destructive distillation of some western conifers. H. K. Benson and M. Darrin. J Ind & Eng Chem 7:916-18 N '15

See also Sawmills; Wood distillation

**Woodcraft**

- Boy scouts and forests. K. W. Woodward. J Am For 21:103-3 F '15

**Woodfinishing. See Wood finishing****Woodlots**

- Woodlot forestry. S. B. Detwiler. J Am For 21:571-4 Ap '15

**Woodward, Robert Simpson, 1849—Sketch. por Eng M 50:210-11 N '15****Woodwork**

- Hints on the use of glue. W. H. Wilkin. Bldg Age 37:63-4 N '15

See also Cabinet making; Furniture; Wood finishing

**Woodworking machinery**

- Electricity in the lumber industry. E. F. Whitney. J diag plans Am Inst E E Pro 33:1823-62 D '14

- New wooden barrel machine. J diag Iron Age 95:784-5 Ap 8 '15

- Wood-working plant at a ship-building yard. J diag Engineer 120:230-2, 243-5, 250 S 3-10 '15

See also Lathes; Planing machines; Sawmills; Saws

**Woodworking shops**

- Economical motor service in lumber mill. J Elec W 65:944 Ap 10 '15

- Electricity in woodworking plants. J Elec R & W Elec'n 66:893-7 My 15 '15

- Methods of disposing of refuse from wood-working plants. F. O. Alton. Elec R & W Elec'n 67:556-7 S 25 '15

- Motors operating at 3600 r.p.m. directly connected to woodworking surfaces. J Elec W 66:643-4 S 18 '15

- Wood-working plant as a ship-building yard. J diag Engineer 120:230-2, 243-5, 250 S 3-10 '15

**Wool**

- Better preparation of American wool for market. J Textile World 49:316-18 Je '15

- Bettering the wool for American mills. Textile World 49:153-4 My '15

- Difference in weight between raw and clean wools. W. S. Lewis. U S Bur Stand Tech Pa 57:1-5 '15; Abstract. J Br Inst 180:473 O '15

- Wool growing in the United States. Textile World 48:313-14 D '14

See also Dyes and dyeing—Wool; Woolen and worsted manufacture; Worsted

**Wool finishing**

- Dyeing and finishing wool fabrics. F. Sadler. J diag Textile World 49:365-8 Je '15

- Fancy cut faced woolens. J Textile World 49:439-40 J1 '15

- Finishing place dyed woolens. Textile World 48:528-7 F '15

- Finishing process for wool goods. Textile World 50:112-13 O '15

- Luster finish. Textile World 49:553-4 Ag '15

- Shearing wool goods. J diag Textile World 49:523-5 Ag '15

- Wool growers, National association of. See National association of wool growers

**Wool scouring**

- Degreasing wool. J diag Textile World 48:805-7 D '14

- Experience gained in the treatment of the wastes from the scouring of wool. H. R. Crohurst and A. D. Weston. Eng & Contr 44:370-6 N 10 '15
- Process for scouring wool. Textile World 48:654 Mr '15

**Wool spinning. See Woolen and worsted spinning****Wool tariff**

- Component material of chief value. J Textile World 50:51-4 O '15

**Wool trade**

- British embargo and the American wool supply. Textile World 48:375-7 D '14

- British embargo on wool trade. Textile World 49:399-402 J1 '15

- British wool embargo. Textile World 48:559-62 Mr '15

- Domestic supply of wool and dyestuffs. C. E. Wry. Textile World 49:95-8 Ap '15

- English market for tops and worsted yarns. Textile World 49:508-9 Ag '15

- Importing wool through the textile alliance. Textile World 49:145-6 My '15

- Moisture regain for worsted tops. Textile World 49:59-61 Ap '15

- Movement of wool in England and Spain. D. E. Dooty. Textile World 48:480-1 F '15

- National association of wool growers; 51st annual meeting at Salt Lake City, Nov. 12-14, 1914. Textile World 48:288-6 D '14

- Wool and the British Empire. Textile World 48:586-8 Mr '15

- Wool grower and the wool trade. Textile World 49:492-4 Ag '15

- Woolen and worsted fabrics in China. T. Sammons. Textile World 49:472-5 J1 '15

See also Wool tariff

**Woolen and worsted machinery**

- Dunn crabbing and lustering machine. J diag Textile World 49:373-4 Je '15

- Fancy cut faced woolens. J Textile World 49:439-40 J1 '15

**Woolen and worsted manufacture**

- Electric driving of woolen mills. J. F. Crowley. Ind Eng 15:81-3 Ag '15

- Estimating the cost of wool goods in English mills. Textile World 49:419-24 J1 '15

- Making of Scotch tweeds. T. Welsh. Textile World 48:398-400, 501-3 Ja-F '15

- Removing odors from wool. Textile World 50:100 O '15

- Shoddy in woolen fabrics. K. B. Lamb. J1 Textile World 49:154-6 My '15

See also Textile industry and fabrics; Wool; Wool finishing

**Cost**

- Estimating the cost of woolen goods. Textile World 48:576-7; 49:32-4 Mr-Apr '15

- Woolen and worsted overseers, National association of. See National association of woolen and worsted overseers

**Woolen and worsted spinning**

- Spinning of woolen yarn. Textile World 50:96-7 O '15

- Woolen mills. See Woolen and worsted manufacture; Textile mills

**Woolworth building, New York**

- Details of Woolworth tower lighting. J Elec R & W Elec'n 66:1048-9 Je 5 '15

- New York's greatest lighting spectacle. C. W. Person. J Sci Am 112:171 F 20 '15

**Worcester, Massachusetts****Architecture**

- First church of Christ, Scientist. J plans Brickb 24:pl 89-90 Je '15

- Large market building at Worcester, Mass. J plans Brickb 24:191-2 Ag '15

**Railroads**

- Boston & Albany railroad improvements at Worcester, Mass. L. G. Morphy. J Boston Soc C E J 1:481-98 N '14

- Worcester polytechnic institute

- Washburn shops of the Worcester Polytechnic institute. G. I. Alden. Am Soc M E J 37:391-4 J1 '15

**Words, Compound. See Compound words**

Working classes. See Labor and laboring classes

Workmen's compensation

Compensation laws and accidents. El. N. Zern. Colliery 35:433-5 Mr '15

Compensation laws and married men. Bldg Age 37:55-6 Ja '15

Montana workmen's compensation law. Eng & Min J 99:1069 Je 19 '15

Principal provisions of the employes' compensation bill pending in the Pennsylvania legislature. Iron Tr R 56:775 Ap 15 '15

Suggestions for a uniform state workmen's compensation law by the National civic federation committee. Am Gas Light J 102:92 F 8 '15

Tendencies toward inefficiency in legislation. R. Walker. Ry Age 58:219-20 F 5 '15

Wisconsin compensation law. C. Muskat. Elec Ry J 45:234-5 Ja 30 '15

Workman's compensation in Pennsylvania. D. A. Reed. Elec Ry J 45:980-1 My 22 '15

Workmen's compensation insurance; abstracts. W. G. Cowles. Elec W 65:1533 Je 12 '15; Elec R & W Elec'n 66:1113 Je 12 '15

See also Employers' Liability

Worm gearing. See Gearing, Worm

Worry

Physiology of worry. E. D. Forrest. Sci Am S 79:21-2 Ja 9 '15

Worsted

Quality numbers for worsted tops. Textile World 48:490-2 F '15

Wounds

Colloidal gold for infected wounds. Sci Am 113:234 S 11 '15

Massage in the after-treatment of the wounded. J. B. Mennell. Sci Am S 80:358 D 4 '15

New method of disinfecting wounds. Sci Am S 80:111 Ag 14 '15

See also Surgery

Wrecking

Felling a brick chimney. C. A. Mead. Il Eng N 73:400-1 F 25 '15

Methods and equipment used in wrecking a 101-ft. steel stack. Il Eng & Contr 44:305 O 20 '15

Methods pursued in tearing down a large building. J. Rosenzweig. diag Eng N 73:666-8 Ap 8 '15

Razing a brick chimney. Il Power 41:274 Mr 16 '15

Razing a 400-ton brick chimney. Il diag Eng N 72:1266 D 24 '14

Safe methods of wrecking buildings. diags Eng & Contr 43:98-100 F 3 '15

Tearing down a 250-ft. reinforced-concrete chimney at Philadelphia. Il Eng N 73:78 Ja 14 '15

Wrecked ship's backbone broken with dynamite. Il Eng Rec 72:191-2 Ag 14 '15

See also Bridge removal; Salvage

Wrecking cars

Electric steam tunnel crane. Il Eng & Contr 43:184 F 24 '15; Elec Ry J 45:427-8 F 27 '15; Iron Age 95:451 F 25 '15; Ry Age 58:369-70 F 26 '15; Ry R 56:280-1 F 27 '15; Sci Am S 79:285 My 1 '15

Wren, Sir Christopher, 1632-1722

Church towers, steeples, and spires of Sir Christopher Wren. R. R. Phillips. Il Brickb 24:185-9, 228-32 Ag-S '15

Wrenches

Hayward combination wrench for pipes and nuts. Il Iron Age 96:411 Ag 19 '15; Eng & Min J 100:518 S 25 '15

Quick-acting screwless wrenches. Il Iron Age 95:995 My 6 '15

## Testing

Hydraulic wrench testing device. Il Mach 22:144 O '15

Writing

Experimental study of the mechanism of writing. Il Sci Am S 80:165 S 11 '15

See also Ciphers; Cuneiform writing; Inscriptions

## Identification

Science and the forger; instruments and illustrations in questioned document cases. A. S. Osborn. Il Sci Am 112:434-5 My 8 '15

Wrought iron

Brittleness of wrought iron as a consequence of heating compressed material; abstract. R. Baumann. Am Soc M E J 37:605-6 O '15

Crystallization of wrought iron. Ry R 56:814-15 Je 12 '15

Properties of Swedish wrought iron. N. Lilienberg. Iron Age 95:788-9 Ap 8 '15

## X

X ray photography. See Radiography

X rays

Application of the Coolidge tube to metallurgical research. W. P. Davey. Il Gen Elec R 18:134-6 F '15; Same. Iron Age 95:500-1 Mr 4 '15; Same. Sci Am S 79:321 My 22 '15; Same, with description of Coolidge tube. Engineer 119:350-1 Ap 9 '15

Coolidge X-ray tube. R. Bown. Il plan Elec W 65:396-7 F 13 '15

Hard X-rays. W. D. Coolidge. J Fr Inst 180:492-3 O '15

Ionizing potential of an X-ray tube. E. C. Drew. bibliog Il diag J Fr Inst 179:697-709 Je '15

Metallic Roentgen-ray tube; abstract. L. Zehnder. diag Elec W 65:605 Mr 6 '15

Model X-ray dark-room. W. P. Davey. plans Gen Elec R 18:1107-10 D '15

New hydrogen X-ray tube. H. C. Snook. Il Sci Am S 79:71 Ja 30 '15

Notes on X-rays. W. S. Andrews. Gen Elec R 18:152 F '15

Physics of X-rays. W. P. Davey. Gen Elec R 18:258-63, 353-8, 625-30 Ap-May, J1 '15

Radiography of metals. W. P. Davey. Il Am Inst Min E Bul 104:1515-25 Ag '15; Same. Gen Elec R 18:795-800 Ag '15; Same cond. Iron Age 95:522-4 S 2 '15; Abstract. J Fr Inst 180:489-90 O '15

Recent developments in X-ray tubes. W. D. Coolidge. Gen Elec R 18:224-5 Mr '15; Same. Sci Am S 79:188 Mr 20 '15

Roentgen tube; abstract. S. Russ. Elec W 65:992 Ap 17 '15

Roentgenology in war. Il Sci Am S 79:68 Ja 30 '15

Searching for contraband with X-rays. Il Sci Am 112:338 Ap 10 '15

X-ray examination of built-up mica. C. N. Moore. Il diag Gen Elec R 18:195-7 Mr '15; Same. Sci Am S 80:253 O 15 '15

X-ray inspection of a steel casting. W. P. Davey. Il Gen Elec R 18:25-7 Ja '15; Same. Iron Age 95:186-7 Ja 21 '15; Same. Sci Am S 79:84 F '15; Same. Eng M 49:108-7 Ap '15; Same. Ry Age (Mech ed) 39:170 Ap '15

X-ray spectrometer for the study of the properties of crystals. diag Sci Am S 79:19 Ja 9 '15

X-ray work in war. Il Sci Am S 79:120-1 F 20 '15

X-rays and crystalline structure. Sibley J 29:103-6 Ja '15; Same. Sci Am S 79:82 F 6 '15

X-rays and crystalline structure. W. H. Bragg. Sci Am S 79:5-7 Ja 2 '15

See also Cathode rays; Radiography; Radiotherapy

Xylene

Action of trioxymethylene on p-xylene in the presence of aluminum chloride. R. C. Huston and D. T. Ewing. Am Chem Soc J 37:2394-9, 2401 O '15

Tolyl esters and toluidides of the nitrosulfonic acids of p-xylene. R. C. Huston. Am Chem Soc J 37:2119-22 S '15

## Y

Yachts

Galvanic corrosion damages hull of yacht. Eng N 74:522-3 S 9 '15

Three-masted auxiliary schooner yacht Sea Call. Il Sci Am 112:623 Je 26 '15



**Yale & Towne manufacturing co.**

Efficient methods of the Yale & Towne mfg. co. and details of its specially-equipped shop. H. C. Estep. II plans Foundry 43:129-37 Ap '15; Same (Castings for locks and hardware). Iron Tr R 56:809-16+. Ap 22 '15

Yale club, N. Y. See New York (city)—Clubs

**Yards**

How Cleveland fixes sizes of courts and yards. plan Eng Rec 71:614 My 15 '15

**Yarn**

Evenness in the manufacture of cotton yarn. Textile World 50:187-8 N '15  
German yarn numbering. Textile World 48:483-90 F '15  
Manufacturing spiral yarn. II diag Textile World 48:311-12 D '14  
Numbering of yarn. Textile World 48:467-8. F '15  
Points on fine yarn manufacture. C. N. Poore. Textile World 50:164-5 N '15  
Strength of yarn. Textile World 48:604-6 Mr '15  
Twists for worsted yarn. Textile World 48:509-11 F '15  
Value of permutized water for processing yarns. A. R. Calvo. Textile World 49:243-4+ My '15  
Weighting cotton yarn. Textile World 50:211-12 N '15

See also Cotton; Silk; Spinning; Textile industry and fabrics; Twine; Wool; Worsted

**Yeast**

Dried beer-yeast as an article of food. Sci Am S 79:311 My 15 '15  
Transforming sugar into proteins and fats. H. W. Hillyer. Sci Am 113:446+ N 20 '15

**Yellow fever**

Discoveries of Dr. Charles J. Finlay. Sci Am 113:210 S 4 '15

Yellow poplar tree. See Tulip tree

**Yellowstone national park**

Geology of the Yellowstone national park. C. H. Butman. II Sci Am S 79:7-9 Ja 2 '15

Yonkers, New York

**Water supply**

Yonkers water supply and its future development. D. F. Fulton. map Am Water Works Assn J 2:1-8 Mr '15; Discussion. 2:8-12, 311-13, 579-81 Mr, Je, S '15

**Young men's Christian association**

Is the railroad Y. M. C. A. really worth while? Ry Age 58:295-6, 358-60 F 19-26 '15  
Solution of the construction camp club house problem. Eng & Contr 44:118 Ag 18 '15

**Young women's Christian association buildings**

Y. W. C. A. building, Newark, N. J.; views and plans. Brickb 24:pl 144-5 O '15

**Young women's Hebrew association building, New York**

Young women's Hebrew association. II Arch & Bldg 47:21-5 Ja '15

**Youth's companion building, Boston, Massachusetts**

Features in the construction of new building for the Youth's companion. W. B. Conant. II diag Concrete Cem 7:133-5 O '15

Large saving in steel effected by new system of flat-slab reinforcement. II plans Eng Rec 72:450-2 O 9 '15

**Ypres, Belgium**

Mergelynck museum at Ypres. II Am Inst Arch J 3:16-18 Ja '15

**Architecture**

Architect's impressions in Belgium. E. T. Richmond. II Am Inst Arch J 3:153-8 Ap '15  
Mediaeval market place of Ypres, an irreparable war loss to architecture. C. A. T. Middleton. II diag Arch Rec 37:289-99 Ap '15

**Z****Zeeland (steamship)**

Floating a stranded ship on air. R. G. Skerrett. II Sci Am 112:84 Ja 23 '15

Zeppelins. See Balloons and airships

**Zinc**

Analysis of spelter; report of subcommittee. J Ind & Eng Chem 7:547-8 Je '15; Same. Eng & Min J 100:439-40 S 11 '15  
Australian zinc contracts. Eng & Min J 100:524-5 S 25 '15  
Care in melting zinc. R. Job and F. F. White. II Iron Age 96:199 J 22 '15  
Determination of spelter coating on sheets and wire. J. A. Aupperle. Metal Ind n s 13:329-30 Ag '15; Same. Iron Age 96:132 J 15 '15; Same (Maintaining galvanizing standards) Iron Tr R 56:1310+ Je 24 '15  
Economizing zinc. H. de B. Parsons. Sci Am S 80:224 O 2 '15  
Ferrocyanide determination of zinc. Eng & Min J 99:258-6 F 6 '15  
Influence of impurities on zinc. Eng & Min. J 99:290 Je 5 '15  
Kinds of spelter. Eng & Min J 99:292-3 F 6 '15  
New method for determining zinc in alloys. Eng & Min J 99:701 Ap 17 '15  
Spelter and its uses. Metal Ind n s 13:4 Ja '15  
Spelter and other coating metals. Met & Chem Eng 13:245 Je '15  
Spelter—its manufacture and properties; with discussion. G. C. Stone. Metal Ind. n s 13:370-3 S '15  
Suggestions about the use of zinc. Old Scotch. Int Marine Eng 20:457 O '15  
Testing spelter coating in France. C. Coulon. Iron Tr R 57:401; Discussion. J. A. Aupperle. 57:401 Ag 26 '15  
Zinc-dust precipitation tests. N. Herz. Am Inst Min E Bul 104:1507-13 Ag '15; Abstract. Met & Chem Eng 13:973-4 D 15 '15  
Zinc in the cyanide mill. A. Dorfmann. Eng & Min J 100:680 O 23 '15  
See also Galvanizing

**Zinc castings**

Cast zinc. Foundry 43:232-3 Je '15

**Zinc chloride**

Specification for zinc chloride treatment. W. F. Goitra. Ry Age 58:459 Mr 12 '15

**Zinc industry and trade**

Australian zinc industry. Eng & Min J 99:704-5 Ap 17 '15

Case of spelter. Eng & Min J 100:234 Ag 7 '15  
European war and the spelter market. W. S. Horner. Metal Work 84:7-8 J 12 '15

Lead and zinc movement. Eng & Min J 100:397 S 4 '15

Non-ferrous metals and the war. W. R. Ingalls. Iron Age 96:420-1 Ag 19 '15

Production of spelter in 1914. Eng & Min J 99:207-8 Ja 23 '15

Situation in spelter. Eng & Min J 99:504-5 Mr 13 '15

Spelter market and galvanized steel sheets. W. H. Abbott. Metal Work 83:923+ Je 25 '15

Spelter production in 1914. C. E. Siebenthal. Iron Age 95:350-1 Ap 15 '15

Spelter statistics for 1914. W. R. Ingalls. Eng & Min J 99:451-4 Mr 6 '15

Zinc concentrates in the British prize courts. Eng & Min J 100:535 O 16 '15

Zinc corporation and the war. Eng & Min J 100:95-7 J 17 '15

Zinc smelting in Great Britain. Eng & Min J 100:322-3 Ag 21 '15

Zinc statistics. Eng & Min J 99:62-6 Ja 9 '15

**Zinc metallurgy**

Concentration at the Timber Butte mill. T. Simons. Met & Chem Eng 13:188-9 Mr '15

Development of zinc smelting in the United States. G. C. Stone. Met & Chem Eng 13:726-7 O 15 '15

Electromagnetic zinc-ore treatment by the Campbell process. L. H. Ives. II diag Eng & Min J 99:379-80 Je 5 '15

Electrometallurgy of zinc. Eng & Min J 100:325-6 Ag 21 '15

Flotation of Joplin-Galena slimes. G. Belchic and G. L. Allen. Met & Chem Eng 13:847 N 15 '15

French process for electrolytic zinc. Met & Chem Eng 13:888 D 1 '15

How spelter is manufactured. G. C. Stone. Iron Tr R 56:564-6+ Mr 18 '15

Leaching a zinc-lime ore with acids. O. C. Ralston and A. E. Gartside. Met & Chem Eng 13:151-5 Mr '15

**Zinc metallurgy—Continued**

- Main points in the economics of the metallurgy of zinc. W. R. Ingalls. *Met & Chem Eng* 13:725-6 O 15 '15
- Metallurgy of zinc in 1914. W. R. Ingalls. *Eng & Min J* 99:95-6 Ja 9 '15
- Mining and milling of lead and zinc ores in the Wisconsin district, Wisconsin. C. A. Wright. *Il plan U S Bur Mines Tech Pa* 95:20-33 '15
- New mill of the Daly West mining co., Park City, Utah. L. O. Howard. *Il plan Met & Chem Eng* 13:597-602 S 15 '15
- Points in the economics of zinc metallurgy. W. R. Ingalls. *Eng & Min J* 100:551-4 O 2 '15
- Preventing blue powder in the electric reduction of zinc ores; a patent granted to Woolsey McA. Johnson. *Met & Chem Eng* 13:763 O 15 '15
- Production of zinc oxide from low-grade carbonate ore at Leadville. *Il Met & Chem Eng* 13:681-3 S 15 '15
- Recent improvements in the metallurgy of zinc. *Eng & Min J* 99:896 My 22 '15
- Reduction of zinc oxide in an electric furnace; patent by F. W. Highfield. *diag Met & Chem Eng* 13:817 N 1 '15
- Refining of zinc waste. L. J. Krom. *Il diag Metal Ind n s* 13:281-3 J 1 '15
- Removal of cadmium from zinc ores. *Eng & Min J* 99:659 Ap 10 '15
- Simmonds' retort-discharging machine. *Il Eng & Min J* 99:449-50 Mr 6 '15
- Smelting of metals in the electric furnace. D. A. Lyon and R. M. Keeney. *U S Bur Mines Bul* 77:91-101 '14
- Status of zinc metallurgy in 1914. *Met & Chem Eng* 13:6 Ja '15
- Treating zinc-bearing materials. *diag Met & Chem Eng* 13:504-5 Ag '15
- Truax zinc-slag treatment. *Eng & Min J* 100:803 N 13 '15
- Use of salt in zinc smelting. *Eng & Min J* 99:917-18 My 22 '15
- Wisconsin zinc district. H. C. George. *Il diag Eng & Min J* 100:385-8 S 4 '15; Correction. 100:762 N 6 '15
- Zinc extraction by electrolysis. E. H. Leslie. *Eng M* 48:910-12 Mr '15
- Zinc manufacture in the Pittsburgh district; plant of the American zinc & chemical company at Langloeth, Pa. *Il map Iron Age* 95:1064-7 My 18 '15
- Zinc oxide from lead blast furnace slag, as in operation at south Chicago. H. B. Pulsifer. *Il Met & Chem Eng* 13:783-5 N 1 '15
- Zinc smeltery at Langloeth. W. R. Ingalls. *diag plan Eng & Min J* 98:985-9 D 5 '14
- Zinc smelting in Great Britain. *Eng & Min J* 100:279 Ag 14 '15
- Zinc mines and mining**
- Geological anatomy of a Tennessee zinc mine. F. L. Nason. *diag Eng & Min J* 100:269-62 Ag 14 '15
- Mining and milling of lead and zinc ores in the Wisconsin district, Wisconsin. C. A. Wright. *U S Bur Mines Tech Pa* 95:1-19 '15
- New developments in the Coeur d'Alene, Idaho. H. I. Ellis. *Il Eng & Min J* 100:387-40 Ag 28 '15
- Wisconsin zinc district. H. C. George. *Il diag map Eng & Min J* 100:295-300, 341-4, 385-8 Ag 21-S 4 '15; Correction. 100:762 N 6 '15
- Zinc mining in Wisconsin in 1914. J. E. Kennedy. *Eng & Min J* 99:65-6 Ja 9 '15
- Zinc ores**
- Calamine mines of Sardinia. C. W. Wright. *Il map Eng & Min J* 100:625-8 O 16 '15
- Formation of the oxidized ores of zinc from the sulphide. Y. T. Wang. *Il Am Inst Min E Bul* 105:1959-2012 S '15
- Zinc deposits of eastern Tennessee. F. L. Nason. *Eng & Min J* 99:784-6 Ap 24 '15
- Zinc poisoning**
- Zinc poisoning. C. H. Fulton. *Eng & Min J* 100:363 Ag 28 '15
- Zinc poisoning. H. W. Gillett. *J Ind & Eng Chem* 7:550 Je '15
- Zirconia**
- Zirconia, a new refractory. H. C. Meyer. *Il Met & Chem Eng* 12:791-3; 13:263-6 D '14, Ap '15
- Zollie**
- Abandon manufacture of new fuel zollie. Horseless *Age* 34:927 D 30 '14
- Zones of silence. See Sound**
- Zoological gardens**
- Animal life in a zoo. A. Pope. *Il Sci Am* 112:385+ Ap 24 '15
- Gardens of the Zoological society of London, its history, organization, and its valuable collections. R. W. Shufeldt. *Il plan Sci Am* S 79:180-1 Mr 20 '15
- Mappin terraces at the Zoo. R. N. Stroyer. *Il diag Engineer* 119:156-7 F 12 '15
- Zoology**
- New faunal conditions in the Canal Zone. H. E. Anthony. *Il Sci Am* S 79:104-6 F 18 '15
- See also Reproduction*
- South America**
- Roosevelt-Rondon scientific expedition. L. E. Miller. *Il Sci Am* S 79:248-9, 268-70 Ap 17-24 '15



